Service Manual

Personal Cellular Telephone

KG190

Version: 1B

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Every care has been taken to ensure that contents of this service manual give an accurate representation of the equipment. However, DARTS TECHNOLOGIES CORP. accepts no responsibility for inaccuracies which may occur and reserves the right to make changes to the design without prior notice.

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IMPORTANT

This document is intended for use by qualified service personnel only.

Company Policy

Our policy is of continuous development; details of all technical modifications will be included with service bulletins.

While every endeavor has been made to ensure the accuracy of this document, some errors may exist. If any errors are found by the reader, please notified it to company

Warnings and Cautions

Please refer to the phone's user guide for instructions relating to operation, care and maintenance including important safety information. Note also the following:

Warnings:

1. CARE MUST BE TAKEN ON INSTALLATION IN VEHICLES FITTED WITH ELECTRONIC ENGINE MANAGEMENT SYSTEMS AND ANTI–SKID BRAKING SYSTEMS. UNDER CERTAIN FAULT CONDITIONS, EMITTED RF ENERGY CAN AFFECT THEIR OPERATION. IF NECESSARY, CONSULT THE VEHICLE DEALER/MANUFACTURER TO DETERMINE THE IMMUNITY OF VEHICLE ELECTRONIC SYSTEMS TO RFENERGY.

2. THE HANDPORTABLE TELEPHONE MUST NOT BE OPERATED IN AREAS LIKELY TO CONTAIN POTENTIALLY EXPLOSIVE ATMOSPHERES EG PETROL STATIONS (SERVICE STATIONS), BLASTING AREAS ETC.

3. OPERATION OF ANY RADIO TRANSMITTING EQUIPMENT, INCLUDING CELLULAR TELEPHONES, MAY INTERFERE WITH THE FUNCTIONALITY OF INADEQUATELY PROTECTED MEDICAL DEVICES. CONSULT A PHYSICIAN OR THE MANUFACTURER OF THE MEDICAL DEVICE IF YOU HAVE ANY QUESTIONS. OTHER ELECTRONIC EQUIPMENT MAY ALSO BE SUBJECT TO INTERFERENCE.

Cautions:

1. Servicing and alignment must be undertaken by qualified personnel only.
2. Ensure all work is carried out at an anti–static workstation and that an anti–static wrist strap is worn.
3. Ensure solder, wire, or foreign matter does not enter the telephone as damage may result.
4. Use only approved components as specified in the parts list.
5. Ensure all components, modules screws and insulators are correctly re–fitted after servicing and alignment. Ensure all cables and wires are repositioned correctly.

1. INTRODUCTION

1.1. Purpose of the Manual

This service manual contains the information and procedures required for installing, operating and servicing the LG GSM Personal Cellular Mobile Telephone system operating on GSM Digital Cellular Networks.

1.2. Structure of the manual

The manual is structured to provide service engineering personnel with the following information and procedures:

1. General and technical information – provides a basic understanding of the equipment, kits and options, together with detailed information for each of the major component parts.

2. Installation and operating information – provides instructions for unpacking, installing and operating the equipment.

3. Servicing information – provides complete instructions for testing, disassembly, and reassembly of the product. Step-by-step troubleshooting information is given to enable the isolation and identification of a malfunction, and thus determine what corrective action should be taken. The test information enable verification of the integrity of the equipment after any remedial action has been carried out.

4. Illustrated parts list – provides to enable the identification of all cosmetic and some electrical components, for the ordering of replacement parts.

1.3. Servicing Responsibilities

The procedures described in this manual must performed by qualified service engineering personnel, at an authorized service center.
The service engineering personnel are responsible for fault diagnosis and repair of all equipment described in this manual.

2. LEVEL 2 SERVICE GUIDELINES

2.1. Introduction

The document is intended to help you carry out repair up to Level 2 on the KG190 mobile phone.

The repair for International version and Asian variants are identical unless otherwise noted, therefore the description herein is confined to KG190 only.

All repairs have to be carried out in an environment set up according to ESD regulations defined in international standards.

2.2. Level of Repair Guidelines

The following description provides an outline of the level of repairs that could be determined at customers' premises. The level of repairs are highly dependent on the customer's resource and capabilities and are approved by

Please abide by your service contract agreements in determining the level of repairs that you are capable of conducting.

Only qualified personnel shall perform all the related repair procedures based on the service contract

2.2.1. Level 0

This level **DO NOT** involved any kinds of repair or disassembly of the mobile unit. The customer **ONLY** needs to identify the fault occurred and send back the faulty units with the fault report to DARTS Mobile Service Center

The inventory swap units are available for order.

Level 0 Part No.

DARTS P/N	Description	SVC Level	LG P/N
2284-1870-6000	Swap Unit Complete, C2500	L0	

2.2.2. Level 1

This level requires the repair or disassembly of the mobile unit up to a certain specified criteria. This level might requires a specific tools in conducting the Level 1 repair job. All components attached to the upper and lower casings are replaceable. **DO NOT** remove any components on the PCB board.

If the repaired units still **DO NOT** function properly, customer needs to attach the fault report together with the units complete with housings and send back to DARTS Mobile Service Center for further investigations.

The components listed below are intended for Level 1 repair spares only.

Level 1 Part No.

DARTS P/N	Description	SVC Level	LG P/N
2207-0030-0003	Vibrator 3V	L1	
2285-2187-0000	BOTTOM CASE Ass'y Silver	L1	
221C-BA03-0102	Battery connector Pitch=2.5mm 3Pin PA08303	L1	
2285-3224-0000	Antenna Ass'y (w Louder SPK)	L1	
2206-1110-0001	Receiver Panasonic - EASG1D501E2	L1	
2285-1187-A000	TOP CASE Ass'y LG Silver (w LENS)	L1	
2211-DP18-1100	Deco. Plate for Side-L	L1	
2211-DP18-2100	Deco. Plate for Side-R	L1	
2211-SE18-0100	SIDEKEY 1 WAY	L1	
2211-SE18-1100	SIDEKEY 2 WAY	L1	
2218-1800-A100	Keypad RUS Silver	L1	
2212-DM18-0000	Metal dome	L1	
2206-5080-0002	MIC. FPT-22718-3	L1	
2211-BA18-0100	Battery Cover LG	L1	
2213-TR18-0100	RF_SW_CAP rubber Grey	L1	
2214-MF13-3Z80	Screw (M1.6*3.8), ZN, White	L1	
2213-TR18-1100	PHONE JACK CAP	L1	
2213-TR18-2100	USB CAP	L1	
225n-TM03-3080	SENSOR VGA TM03-E1-X10	L1	

2.2.3. Level 2

This level of repair requires the exchange of the mobile unit main board. There will be non-removal of any components on the faulty main board. The exchanged faulty main boards shall be properly packed in a plastic bulk with the attached IMEI label and fault report and send back to DARTS Mobile Service Center for detailed repairs.

Level 2 Part No.

DARTS P/N	Description	SVC Level	LG P/N
2281-1831-0000	PCB Main Board, ARX	L2	

2.2.4. Level 2.5

This level requires the repair or removal of certain specified discrete components of the mobile units' main board. This level of repair might requires a specific tools and soldering equipments with proper soldering jigs in conducting the repair job.

ONLY THE QUALIFIED PERSONNEL SHALL BE LIABLE TO PERFORM THIS LEVEL OF REPAIRS UNDER THE SUPERVISION AND APPROVAL OF DARTS TECHNICAL TRAINER.

Level 2.5 Part No.

DARTS P/N	Description	SVC Level	LG P/N
2221-1261-0002	LCM STN 128x128dot 26P LKC34TML8Y	L2.5	
220B-0010-0000	BACKUP BATT D4.8Xh1.4mm 0.06F XC414-II06	L2.5	
220S-1020-0081	SIDE KEY 20MA/12V 6P	L2.5	
220S-2010-0081	RF TEST SWITCH 6000MHz 2W 50 OHM MS156	L2.5	
2212-BC18-0000	BASE BAND COVER FOR ARI	L2.5	
2212-BF18-0000	BASE BAND FRAME FOR ARI	L2.5	
2212-RC18-0000	RF COVER FOR ARI	L2.5	
2212-RF18-0000	RF FRAME FOR ARI	L2.5	
221C-SC06-0102	SIM CARD CONN PITCH=2.54mm 6P 217-010-60	L2.5	
221C-SP02-0186	SPEK CONN P=3mm 2P CBE-2809-2258H POGOPI	L2.5	
221C-PG01-0181	POGO PIN 1P CDR-5815-2961	L2.5	
221J-EP06-0988	EARPHONE JACK 6P	L2.5	
221J-MU05-0185	MINI USB CONN 5P US25R05-SBP	L2.5	
2265-0301-0582	LED R G B HT-372FCH-DT	L2.5	
221C-sk20-0186	Socket 20p CLE9020-0102F	L2.5	

DO NOT INTEND TO REMOVE ANY ACTIVE COMPONENTS AS THIS WILL CAUSE THE MAIN BOARDS TO MALFUNCTION AND BEYOND THE REPAIR BOUNDARIES

2.3. Level of Repair Service Tools and Interfaces

This section provides an overview of the necessary equipments and tools to conduct the specified levels of repair job accordingly.

Level of Repairs	Tools & Equipments	DARTS P/N	LG P/N
0	Not required		
1	ESD Strap, Tweezer, Power Drill, Air blower, Flux remover, Disassembly tool, Digital Multimeter		
2	ESD Strap		
2.5	As in Level 1 with additional equipment: Soldering and desoldering station, Flux paste, Solder wick, Solder lead, C2500 soldering jigs, CTS 55 GSM Tester, C2500 Testing jigs, Power supply		

The service interface is used for the purpose of communicating with the mobile unit in situation such as software upgrading and testing process. These service interfaces are listed below:

DARTS P/N	Description	SVC Level	LG P/N
	RF Cable	L2.5	
	SW D/L cable :	ALL	

2.4. Features

The LG Telephone Model KG190 is a high performance small, light handset for business and domestic use. The following features are provided:

1. Triple Codec which includes Half Rate / Full Rate and Enhanced Full Rate (EFR) speech codec.
2. Tri Band E-GSM900 and DCS1800/PCS1900 operation.
3. GPRS Service.
4. T9 Text Entry.
5. Voice Ringer.
6. Wireless Application Protocol (WAP) Browser.
7. Backup Battery.
8. Downloadable polyphonic melody ring tones.
9. Clock, Calculator and Currency Converter.

2.5. Mobile Unit Basic Kit

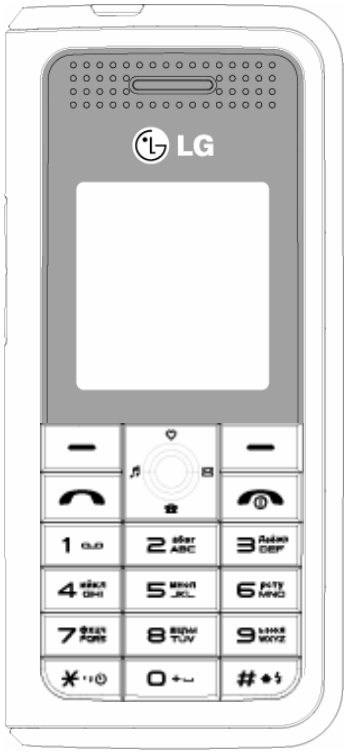


Figure 2.5.1 Mobile Unit

Figure 2.5.2 Battery Pack

Figure 2.5.3 Earphone

Figure 2.5.4

Figure 2.5.5 AC Travel Charger

Figure 2.5.6 Software Download Cable

Item	Description	Part Number
1	Cellphone	
2	Standard Battery (Li-lon 720mAh)	220A-0307-1000
3	Earphone	
4	***USB cable***	
5	AC Travel Charger	2237-22T0-1003
6	***Software Download Cable***	

3. OPERATING INSTRUCTIONS

3.1. General

This section provides a brief guide to the operation and facilities available on the telephone handset. Refer to the Operating Instruction supplied with the telephone for full operational information.

3.2. Liquid Crystal Display

The telephone handset has a graphical chip on glass display. The following icons are available:

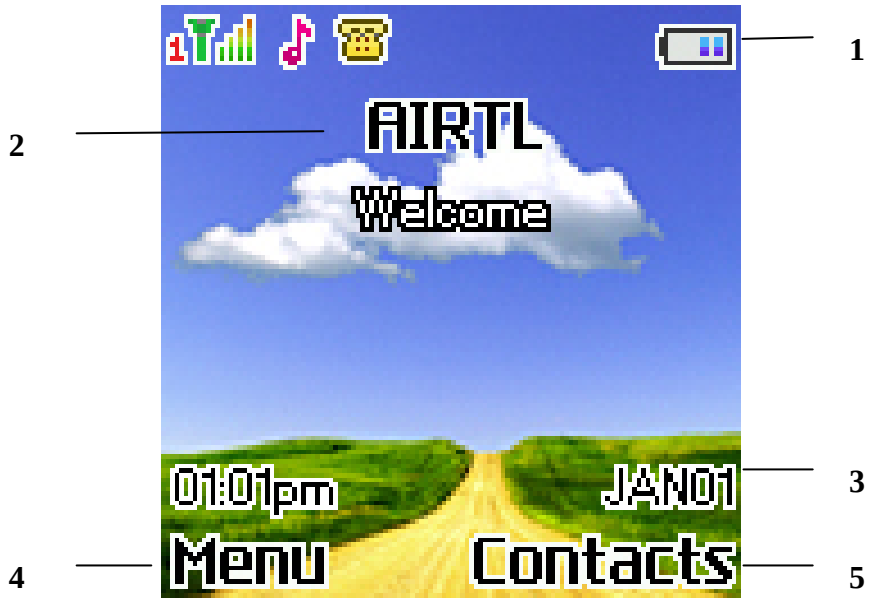


Figure 3.1: Crystal Display

1. Top of the screen shows Essential Indicators. (See table below)
2. Next line displays the operator name
3. shows date/time.
4. To enter **Menu** press left selection key.
5. To use **Name** in the phone book press right selection key.

Essential indicators

	Indicates signal strength and alternate line service.
	Shows handset current battery charge strength.
	Indicates the phone keypad is locked.
	Indicates the profiles alert type is Ring
	Indicates the profiles alert type is vibration.
	Indicates the profiles alert type is vibration and ring.
	Indicates the profiles alert type is vibration then ring.
	Indicates the profiles alert type is light only.
	The Alarm clock is set on.
	Indicates “roaming”.
	Indicates missed call.
	Indicates Broadcast set on.
	Indicates new text messages.
	Indicates call diverted is set on
	Indicates GPRS service
	Indicates earphone plug in

3.1. Location of Controls

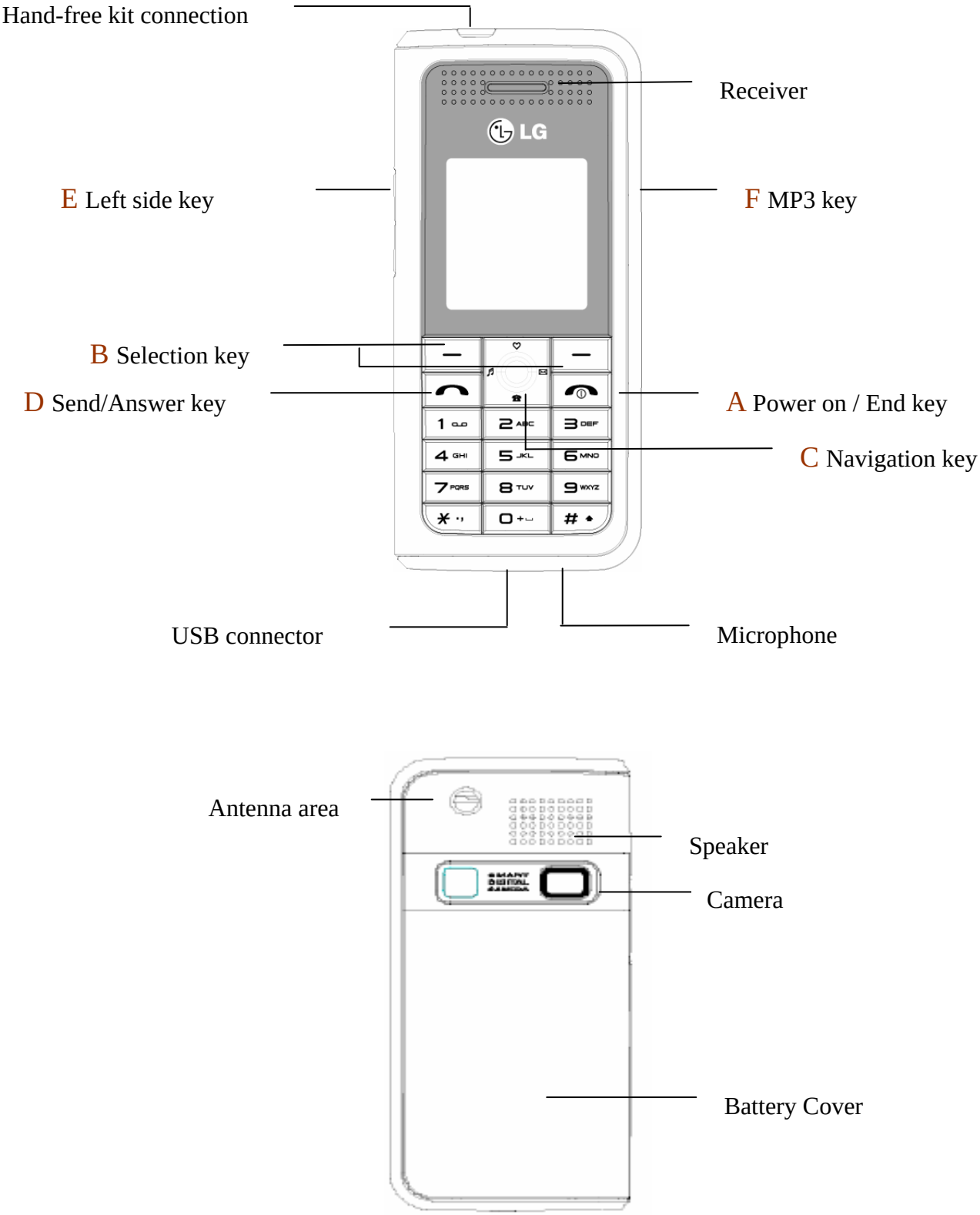


Figure 3.2: Location of Controls

3.2. Alpha Entry

3.4.1. Character Set / Key Assignments

There are 20 keys on KG190, including 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, *, #, SEND, END, Left-Soft-Key (LSK), Right-Soft-Key (RSK), 4-way Navigation Key.
The following ID drawing is only used for Keypad Layout’s reference.

Figure 3.3: KG190 Keypad Layout

Key Function List

- A. Power/End key.
  - Switch phone on and off. Also, ends a call or Exit from any function and back to Idle mode.

- B. Selection Key
  - The function of the keys depends on the text shown on the display above the keys. For example, **Menu** and **Name** in Idle mode.

- C**.** Navigation Key
  - Use for quick access to phone functions in Idle mode.
    - ♦ Up key: Access to the **Favorites** menu.
    - ♦ Down key: Access to the **Phone book** menu
    - ♦ Left key: Access to the **Profiles** menu
    - ♦ Right key: Access to the **Messages** menu
  - Scroll through names and numbers stored in the phone book or through the phone's menus, submenus, and option list.

- D. Send/Answer Key
  - Make and answer calls; press in Idle mode to see recent dialed calls.
  - 0-9 input number and character

- E. Left Side Key
  - Adjust handset volume

- F. MP3 Play Key/ Camera Play Key
  - The shortcut to enter audio player in Idle mode.
  - The shortcut to enter camera key by pressing deeply in idle mode.

3.5. Public Man Machine Interface (MMI)

3.5.1. Reading the Phonebook Memory Location

<MEMORY LOCATION>
Leading zeros can be left out of the location number, e.g. 007 can be 7.

3.5.2. Features for Factory Service

Features	Description
Factory mode	By 2945#*# to enter factory mode 1. Version 2. Resource BIN 3. Echo loop 4. Keypad 5. Vibrator 6. Loud Spk 7. Ring tone 8. LED 9. LCD 10. LCD contrast 11. Receiver 12. Charger 13. Headset 14. RTC 15. MTBRF 16. UART 17. Nand Flash 18. CAMERA 19.Reset Factory
Display IMEI	By *#06#
Enter Engineer Mode	By *#3646633# 1. Network Info 2. Device 3. Audio 4. GPRS act. 5. Band Sel. 6. Misc. 7. Auto Test List 8. PWR Down Control 9. Debug Info 10. Socket Test
Reset to default language	*#0000#[SEND]
Set language to Russian	*#0007#[SEND]
Set language to English	*#0044#[SEND]

3.5.3.Tips for Call Option

A call can be connected to any single caller by pressing Option key. When user press Option key during active call, user can choose one of those functions from the list:

Hold: put a call on.
Retrieve: reconnect a holding call.
Retrieve All: reconnect all holding call.
Swap: switch between the call on hold and active.
Conference: make a multi-party conversation.
Transfer: transfer a call.
Spilt: to suspend the multi-party call.
End Single: end one of conference call.
End All: end a multi-party call.
End: End a call.
Mute: mute the call during the conversation.
New Call: make a new call during an active call.
Phonebook: shortcut to phonebook menu.
SMS: shortcut to Message menu.
Sound Recorder: shortcut to Sound Recorder submenu.
DTMF: set **On** / **Off** for DTMF (Dual Tone Multi-Frequency) tone dialing system.

3.6. Security Procedure

Features	Description
PIN 1 and 2	PIN activate, changing and deactivation
PIN control	Menu entry to change PIN2/phone code
Phone code	Manufacture defined codes to protect phone (4 – 8 digits). Changeable by user.
FDN	Fixed Dialled Number for limited Dialling
BDN	Barred Dialled Number for limited Dialling

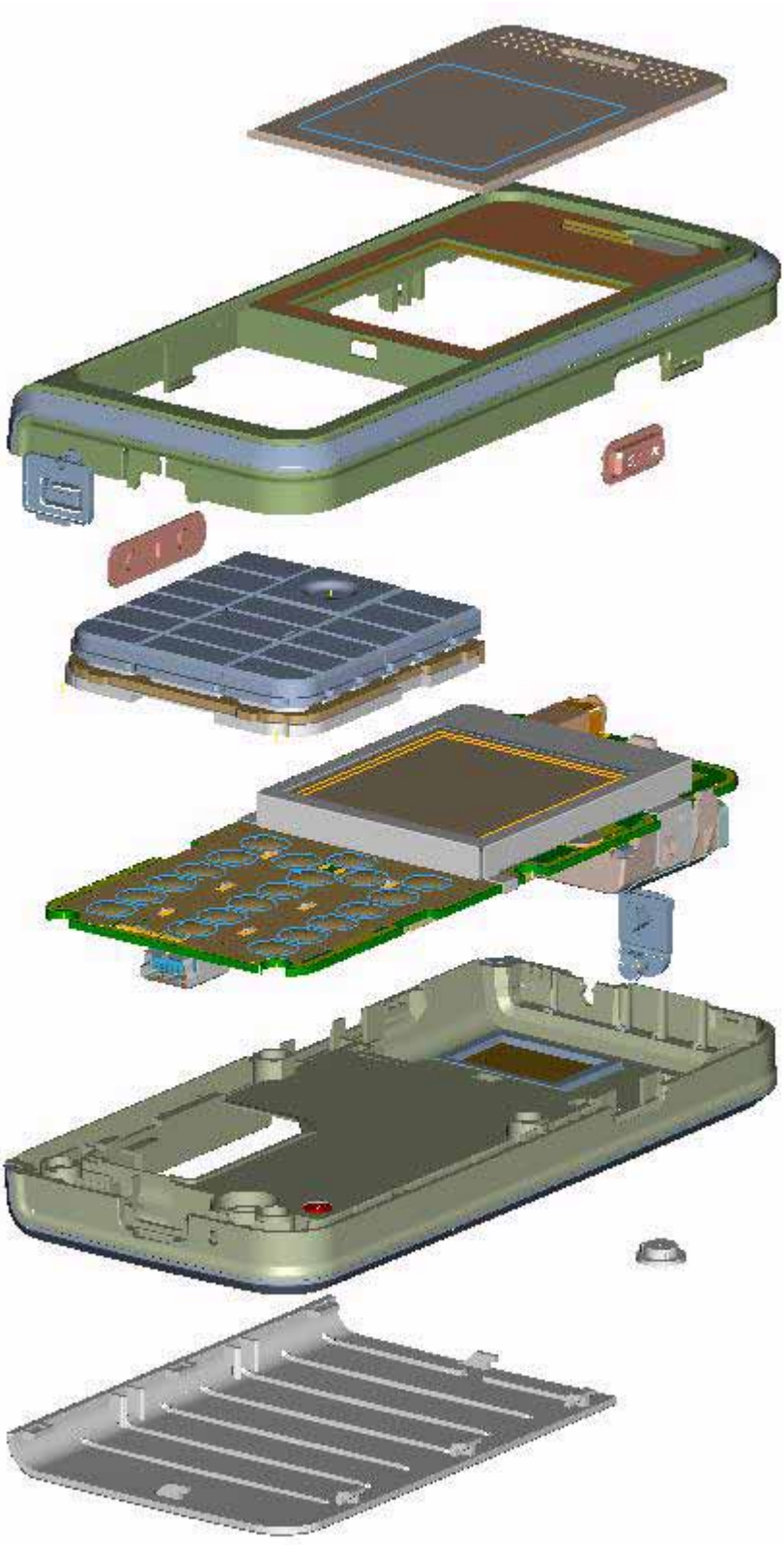
3.7. Troubleshooting

The user is given the following information and advised to contact the dealer if the problems persist:

Problem	Cause	Remedy
Telephone will not switch on		Check that the battery pack is fully charged and correctly connected to the telephone.
Extremely short battery life for a new battery pack	The network in use and the condition of the battery pack can affect battery life.	Avoid areas of poor reception. Ensure batteries are fully charged.
Short battery life for an old battery pack	The battery pack was worn out.	Replace with a new one.
The battery level indicator does not light when charging	If a battery is deeply discharged it will take a short time before there is sufficient owner in the telephone to light the battery level indicator.	Leave to charge for several minutes in temperatures between +5°C and + 35°C.
Calls cannot be made	The telephone is locked.	Unlock the telephone (Menu: Setting: security setup: Phone Lock).
	Outgoing calls are barred.	Disable the outgoing call barring (Menu: Setting: security setup: Barred dials) (Menu: Setting: call setup: call barring)
	The telephone is not registered to a network.	Move to a coverage area and operate the telephone after it has registered with a network.
Calls cannot be made from Fixed Dial Stored		Check that SIM supports Fixed Dial Check if the Fixed Dial is switched on (Menu: Setting: security setup: Fixed dials). Check the telephone number is stored in the Fixed Dial.
Calls cannot be received	The telephone is not switched on.	Switch the telephone on.
	Incoming calls are barred.	Disable the incoming call barring (Menu: Setting: security setup: Barred dials) (Menu: Setting: call setup: call barring)
	The telephone is not registered to a network.	Move to a coverage area and operate the telephone after it has registered with a network.
Emergency calls cannot be made	User's phone is not in a GSM coverage area.	Check that the antenna symbol is displayed. Move to coverage area and operate the telephone when the antenna symbol is displayed.
Telephone numbers Cannot be recalled	The telephone is locked.	Unlock the telephone (Menu: Setting: security setup: Phone lock).
	Fixed Dial is switched on	Switch off Fixed Dial (Menu: Setting: security setup: Fixed dials).

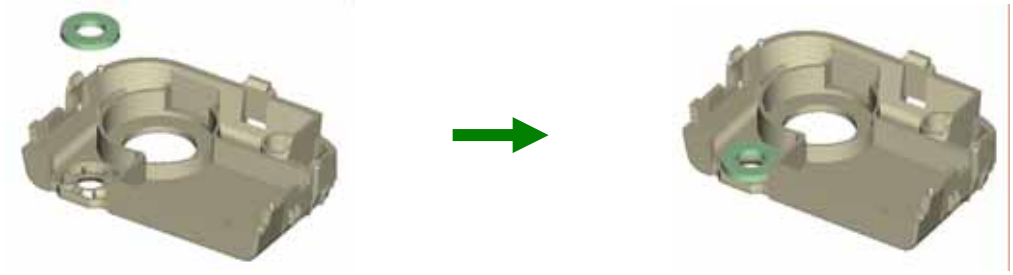
4. ASSEMBLY INSTRUCTIONS

4.1. Assembly Structure

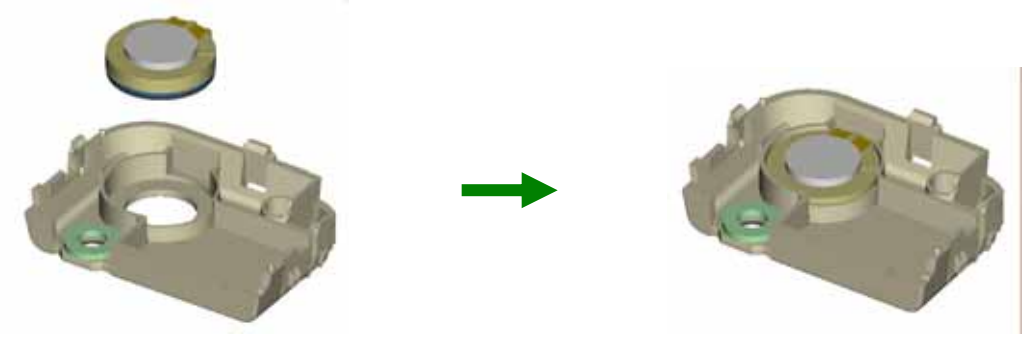


4.2. Antenna Base sub assembly

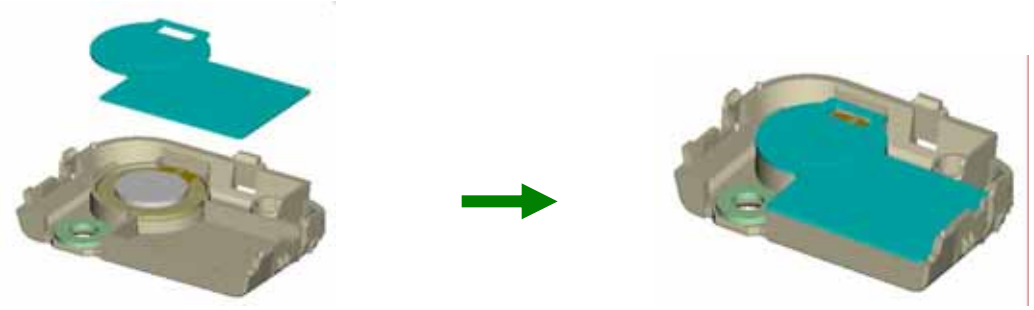
1. To add cmos rubber on antenna base



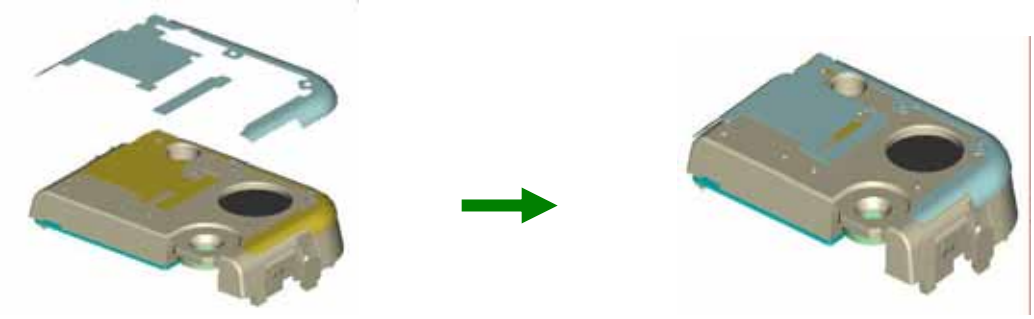
2. To add speaker on antenna base



3. To add speaker cover on antenna base

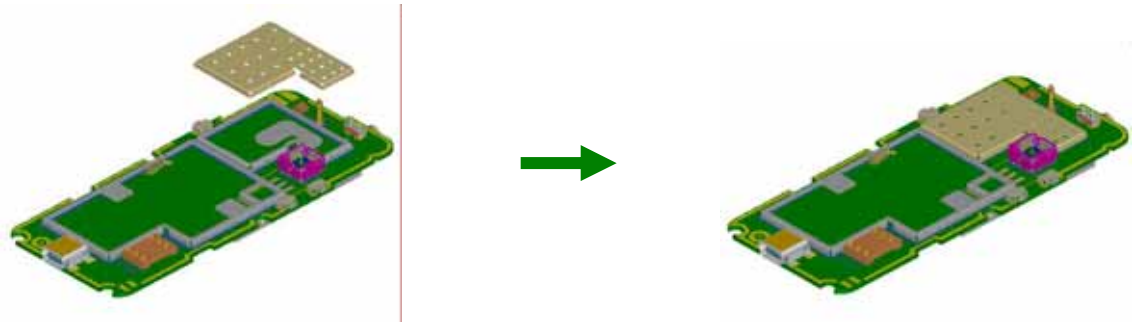


4. To add antenna metal plate on Antenna base

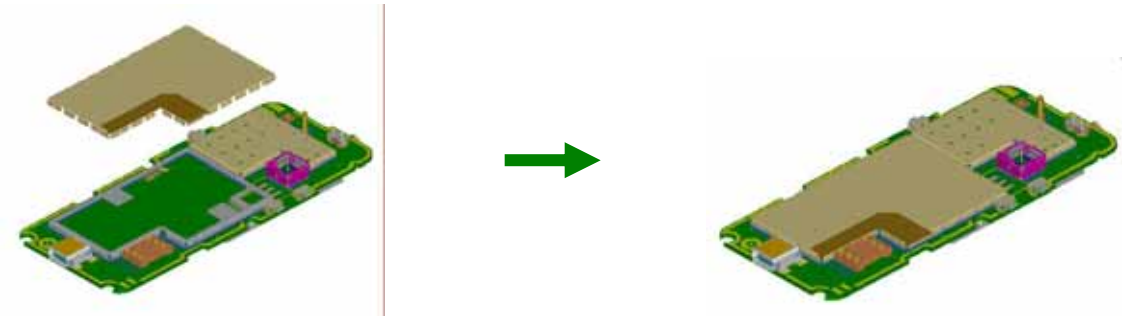


4.3 PCBA sub assembly

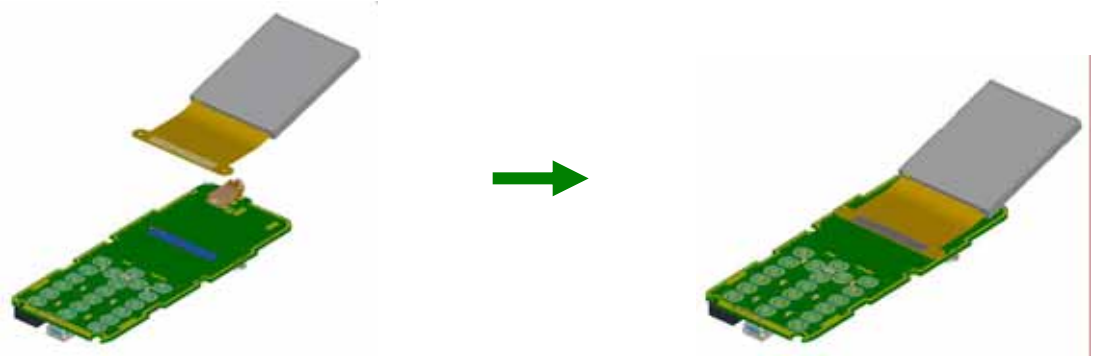
1. To add RF shielding cover on PCBA



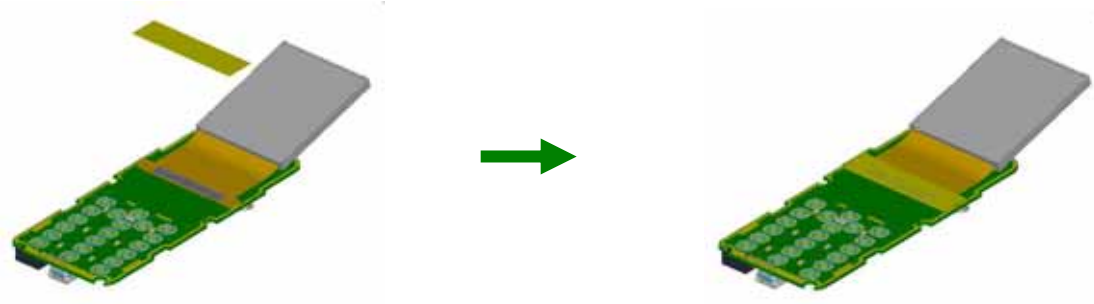
2. To add BB shielding cover on PCBA



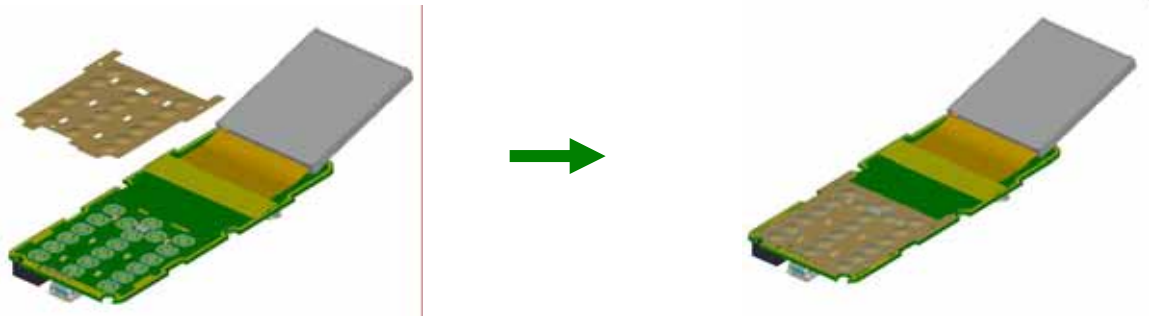
3. To add LCM module on PCBA



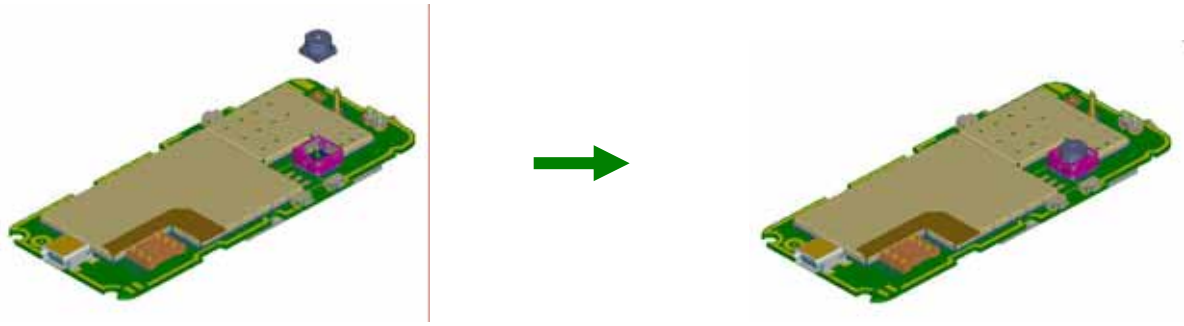
4. To stick tape in LCM golden finger



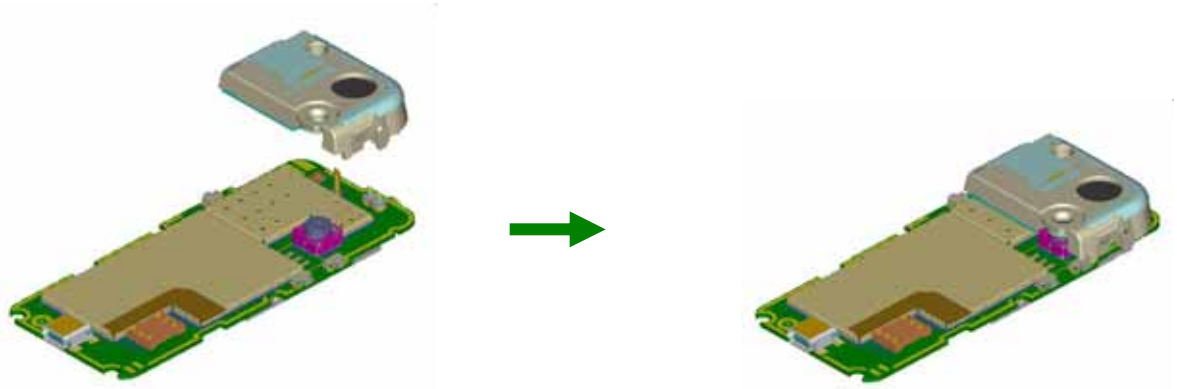
5. To add metal dome on PCBA



6. To add CMOS on PCBA



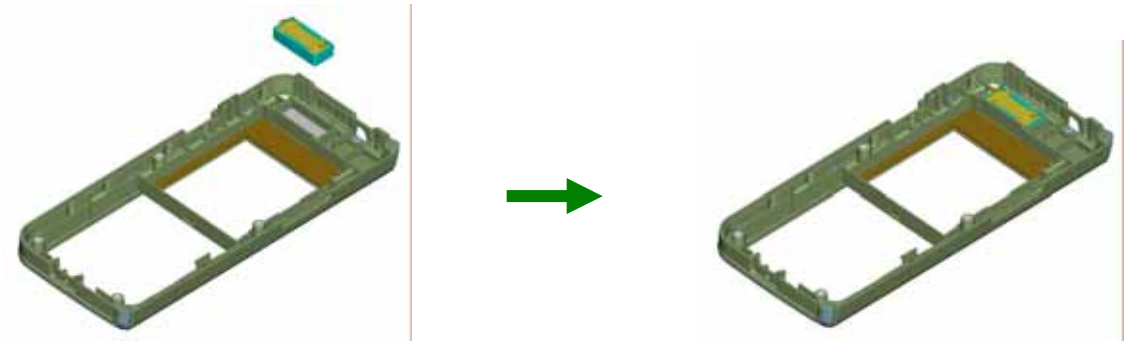
7. To add antenna base on PCBA



8. To add LCM shielding on PCBA

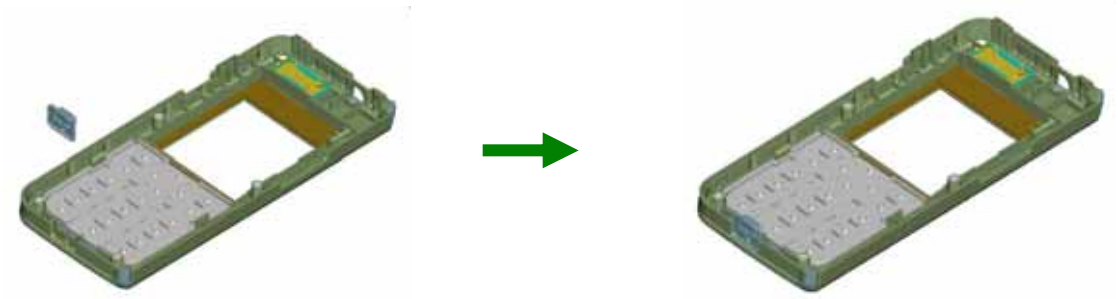
4.4 Top case sub assembly

1. To add receiver rubber and receiver on top case

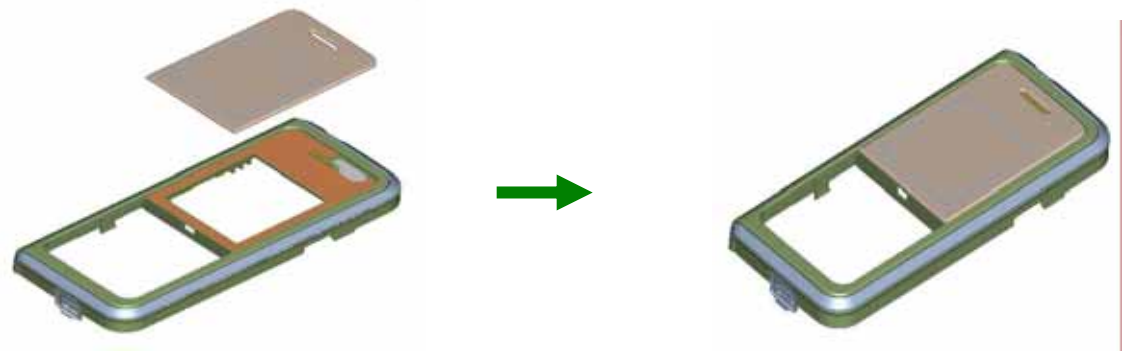


2. To add Keypad on top case

3. To add mini-USB cap on bottom case

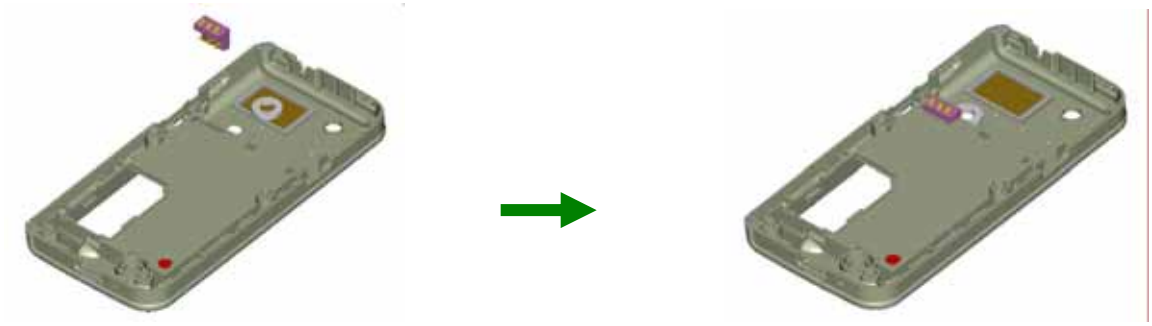


4. To stick lens on top case

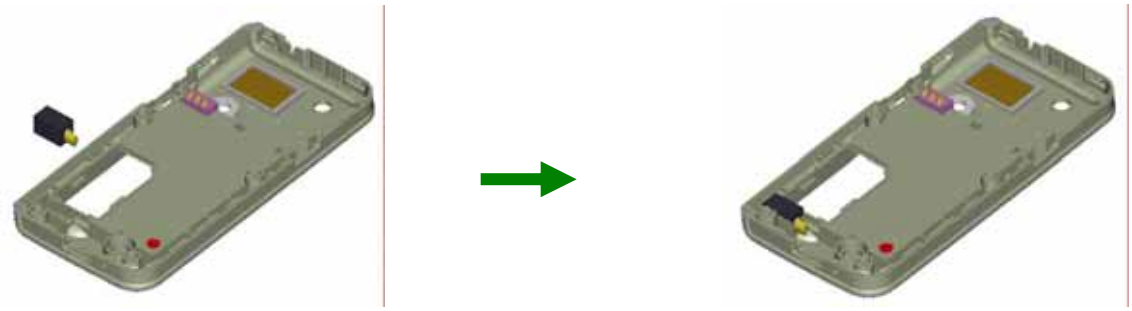


4.5 Bottom case sub assembly

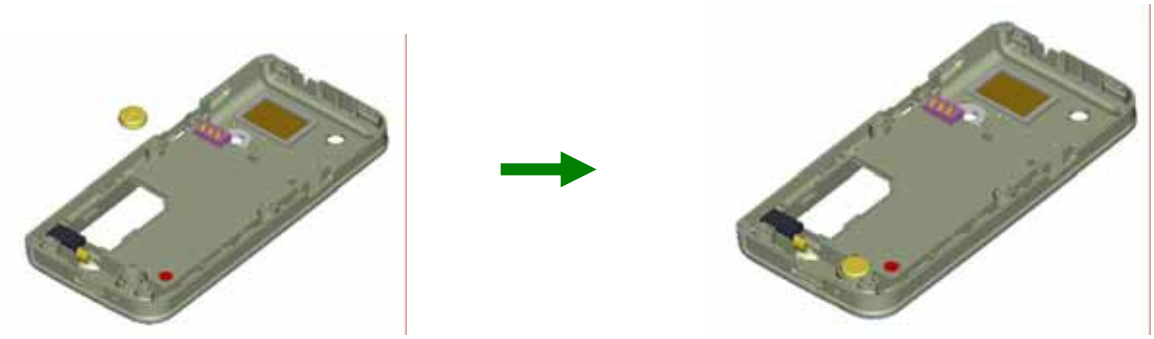
1. To add battery connector on bottom case



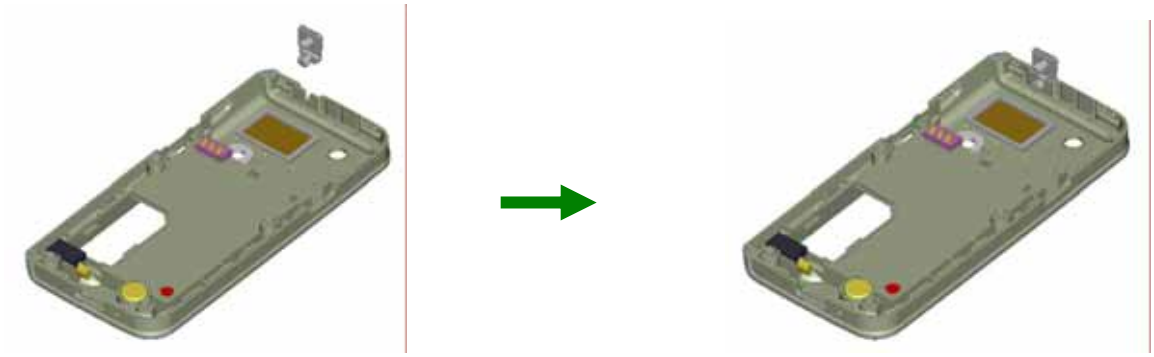
2. To add vibrator on bottom case



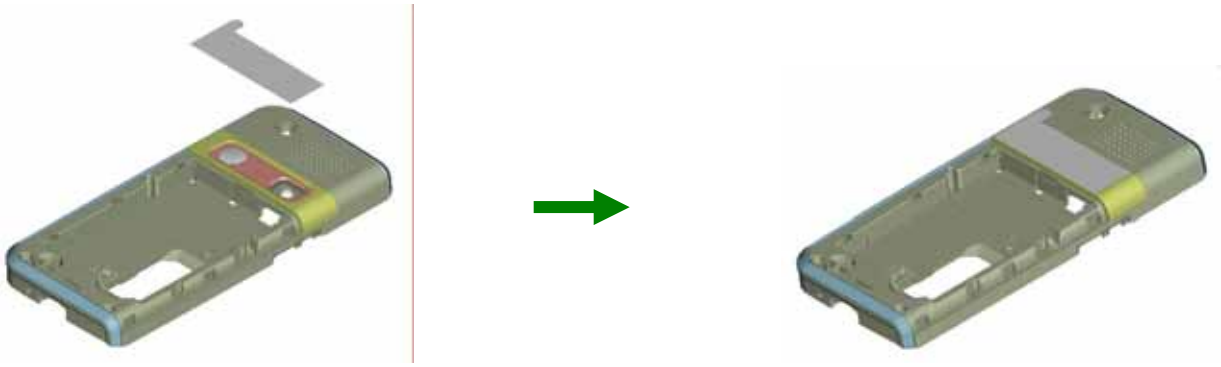
3. To add Mic on bottom case



4. To add earphone cap on bottom case.



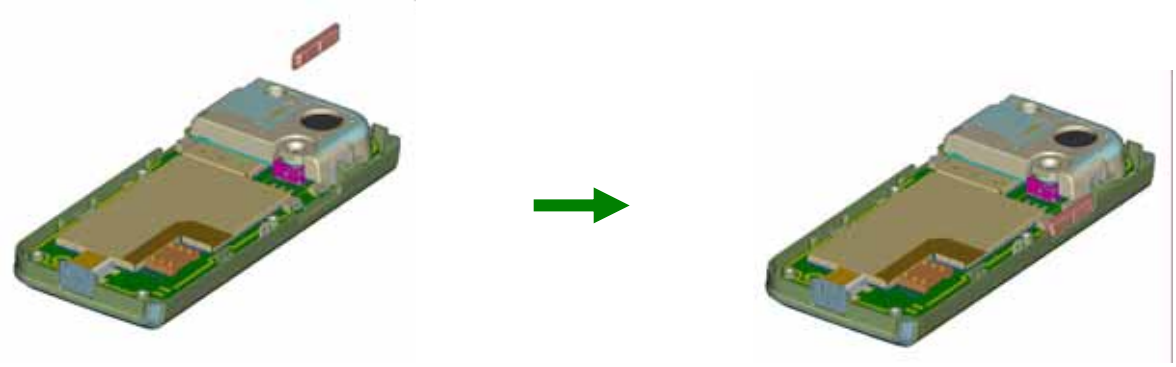
5. To stick cmos lens on bottom case



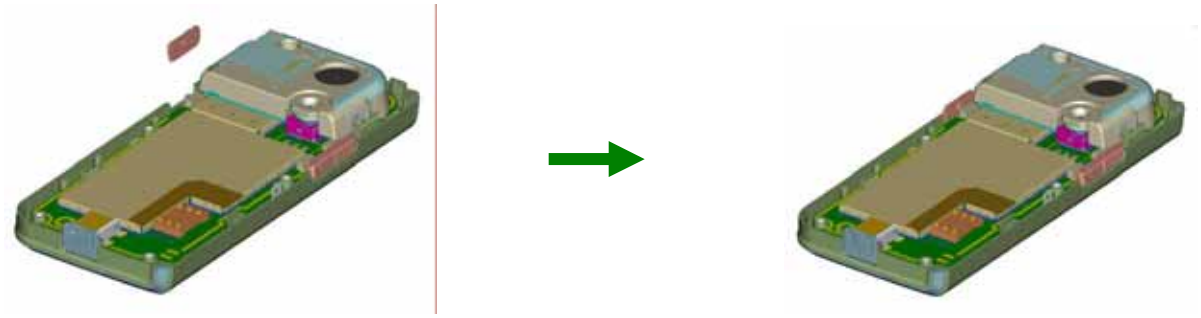
4.6 Main assembly

1. To add PCBA sub assembly on top case sub assembly.

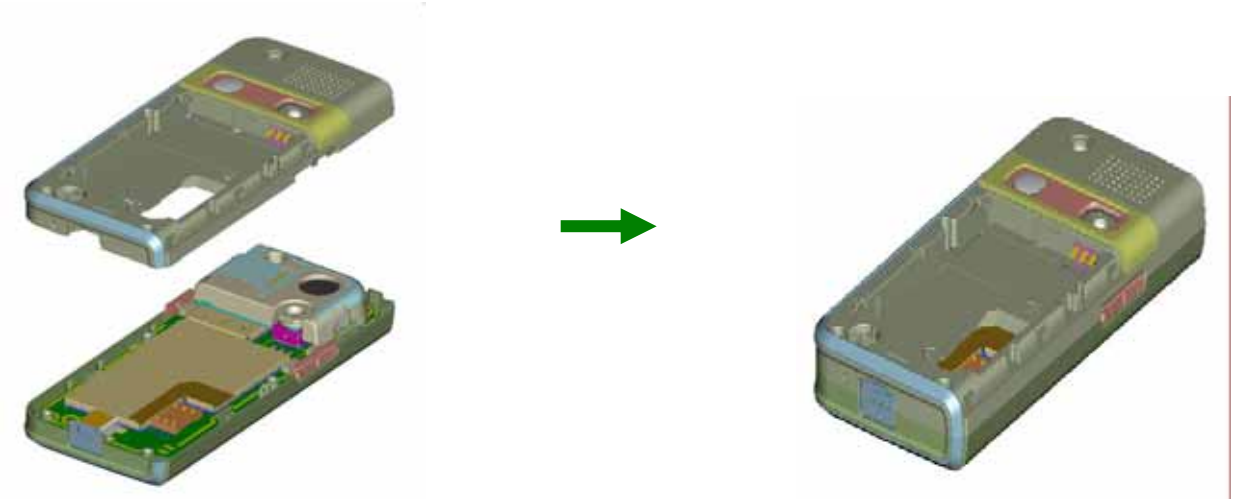
2. To add right side key on main assembly.



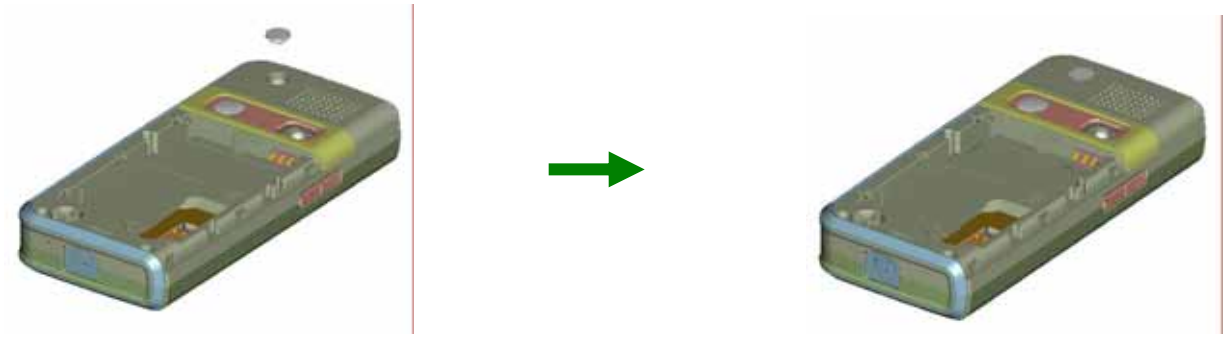
3. To add left side key on main assembly.



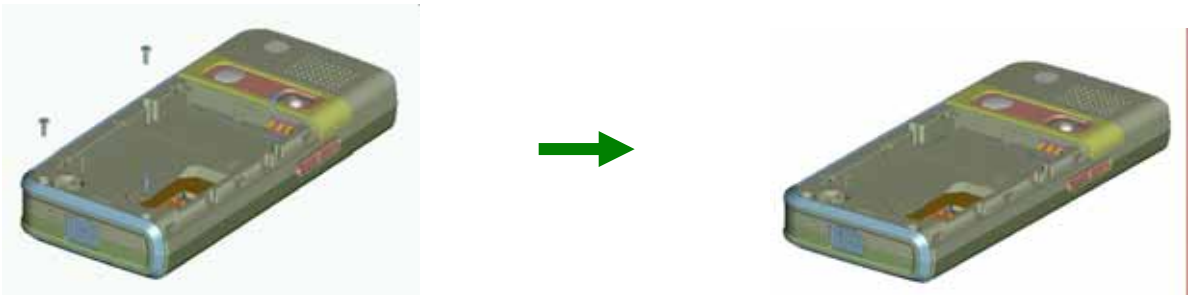
4. To add bottom sub assembly on main assembly.



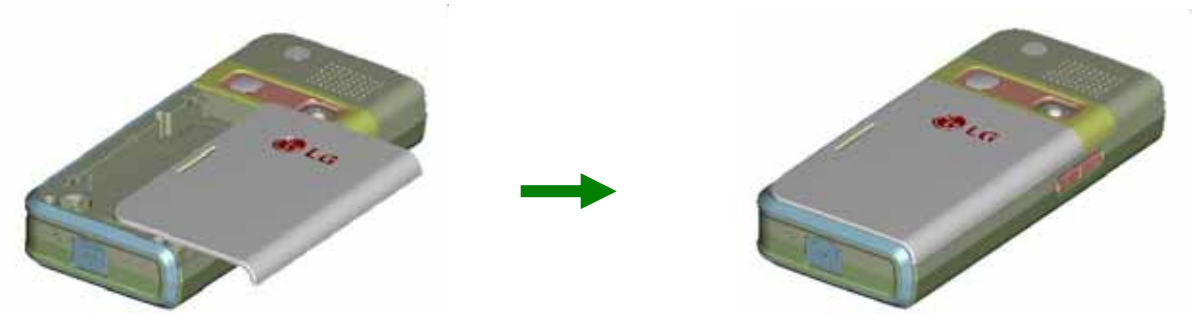
5. To add RF cap on Main assembly



6. To screw four screws



7. To add battery cover on main assembly.



5 TECHNICAL SPECIFICATION

5.1. TX Characteristics

All data is applicable to E-GSM900 and DCS1800 / PCS1900 except where stated.

5.1.1. Frequency Error

± 0.1 ppm max. relative to base station frequency.

5.1.2. Modulation Phase Error

RMS: Equal to or less than 5°
Peak: Equal to or less than 20°

5.1.3. Output RF Spectrum due to Modulation

Offset from Centre Frequency (kHz)	Maximum Level Relative to Carrier (9dB)
±100	+ 0.5
±200	– 30
±250	– 33
±400	– 60
±600 to 1800	– 60

5.1.4. Output RF Spectrum due to Switching Transients

Offset from Centre Frequency (kHz)	Maximum Level (dBm)		
	E-GSM 900	DCS 1800	PCS 1900
±400	– 19	– 22	– 22
±600	– 21	– 24	– 24
±1200	– 21	– 24	– 24
±1800	– 24	– 27	– 27

Measurement conditions for output RF spectrum measurements:

Frequency Spen 0 Hz
Measurement Bandwidth: 30 kHz
Video Bandwidth: 30 kHz (modulation)
100 kHz (switching)
Average (Modulation) Over 200 burst
Peak Hold (Switching) Over 10 burst

5.1.5. Spurious Emissions at Antenna Connector

Frequency range	**Power level in dBm**		
	GSM 400, GSM 700, GSM 850, GSM 900	**DCS 1 800**	**PCS 1 900**
9 kHz to 1 GHz	-36	-36	-36
1 GHz to 12,75 GHz	-30		-30
1 GHz to 1 710 MHz		-30	
1 710 MHz to 1 785 MHz		-36	
1 785 MHz to 12,75 GHz		-30	

Frequency range	Frequency offset	Filter bandwidth	Approx video bandwidth
100 kHz to 50 MHz	-	10 kHz	30 kHz
50 MHz to 500 MHz excl. relevant TX band: GSM 450: 450,4 MHz to 457,6 MHz; GSM 480: 478,8 MHz to 486 MHz, and the RX bands: For GSM 400 MS: 460,4 MHz to 467,6 MHz; 488,8 MHz to 496 MHz.	-	100 kHz	300 kHz
500 MHz to 12,75 GHz, excl. relevant TX band: GSM 750: 777 MHz to 792 MHz GSM 850: 824 MHz to 849 MHz; P-GSM: 890 MHz to 915 MHz; E-GSM: 880 MHz to 915 MHz; DCS: 1 710 MHz to 1 785 MHz, PCS 1 900: 1 850 MHz to 1 910 MHz; and the RX bands: For GSM 400 MS, GSM 900 MS and DCS 1 800 MS: 925 MHz to 960 MHz; 1 805 MHz to 1 880 MHz. For GSM 700 MS, GSM 850 MS and PCS 1 900 MS: 747 MHz to 762 MHz; 869 MHz to 894 MHz; 1 930 MHz to 1 990 MHz	0 to 10 MHz >= 10 MHz >= 20 MHz >= 30 MHz (offset from edge of relevant TX band)	100 kHz 300 kHz 1 MHz 3 MHz	300 kHz 1 MHz 3 MHz 3 MHz
relevant TX band:			
GSM 450: 450,4 MHz to 457,6 MHz	1,8 to 6,0 MHz	30 kHz	100 kHz

Frequency range	Frequency offset	Filter bandwidth	Approx video bandwidth
GSM 480: 478,8 MHz to 486 MHz GSM 750: 777 MHz to 792 MHz GSM 850: 824 MHz to 849 MHz P-GSM: 890 MHz to 915 MHz E-GSM: 880 MHz to 915 MHz DCS: 1 710 MHz to 1 785 MHz PCS 1 900: 1 850 MHz to 1 910 MHz	> 6,0 MHz (offset from carrier)	100 kHz	300 kHz
NOTE 1: The excluded RX bands are tested in sub clause 13.4. NOTE 2: The filter and video bandwidths, and frequency offsets are only correct for measurements on an MS transmitting on a channel in the Mid ARFCN range. NOTE 3: Due to practical implementation, the video bandwidth is restricted to a maximum of 3 MHz.			

5.1.6. Residual Peak Power

Equal to or less than 70 dBc (BW = 300 kHz)

5.2. Rx Characteristics

5.2.1. Sensitivity

E-GSM 900 Full Rate Speech

The reference sensitivity performance in terms of frame erasure, bit error, or residual bit error rates (whichever is appropriate) is specified in the following table, according to the propagation conditions.

Channels	Propagation Conditions TUhigh		Propagation Conditions RA		Propagation Conditions HT		Static Conditions	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/FS FER Class lb(RBER) Class ll(RBER)	6.742 0.42 8.33	8900 1000000 120000	7.5	24000	9.333	60000	0.122 0.41 2.439	164000 20000000 8200

The reference sensitivity level is < －102dBm.

E-GSM 900 Half Rate Speech

The reference sensitivity performance in terms of frame erasure, bit error, or residual bit error rates (whichever is appropriate) is specified in the following table, according to the propagation conditions.

Channels	Propagation Conditions TUhigh		Propagation Conditions RA		Propagation Conditions HT	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/HS FER	4.598	13050				
TCH/HS Class lb(BFI=0)	0.404	148500				
TCH/HS Class II(BFI=0)	7.725	25500	8.500	20000	7.600	20000
TCH/HS(UFR)	6.250	9600				
TCH/HSL class lb((BFI or UFI)=0)	0.269	227000				

DCS 1800 Full Rate Speech

The reference sensitivity performance in terms of frame erasure, bit error, or residual bit error rates (whichever is appropriate) is specified in the following table, according to the propagation conditions.

Channels	Propagation Conditions TUhigh		Propagation Conditions RA		Propagation Conditions HT		Static Conditions	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/FS FER	6.742	8900					0.122	164000
Class lb(RBER)	0.42	1000000	7.5	24000	9.333	60000	0.41	20000000
Class ll(RBER)	8.33	120000					2.439	8200

The reference sensitivity level is < －102dBm.

DCS 1800 Half Rate Speech

The reference sensitivity performance in terms of frame erasure, bit error, or residual bit error rates (whichever is appropriate) is specified in the following table, according to the propagation conditions.

Channels	Propagation Conditions TUhigh		Propagation Conditions RA		Propagation Conditions HT	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/HS FER	4.598	13050				
TCH/HS Class lb(BFI=0)	0.404	148500				
TCH/HS Class II(BFI=0)	7.725	25500	8.500	20000	7.600	20000
TCH/HS(UFR)	6.250	9600				
TCH/HSL class lb((BFI or UFI)=0)	0.269	227000				

PCS 1900 Full Rate Speech

The reference sensitivity performance in terms of frame erasure, bit error, or residual bit error rates (whichever is appropriate) is specified in the following table, according to the propagation conditions.

Channels	Propagation Conditions TUhigh		Propagation Conditions RA		Propagation Conditions HT		Static Conditions	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/FS FER	6.742	8900					0.122	164000
Class lb(RBER)	0.42	1000000	7.5	24000	9.333	60000	0.41	20000000
Class ll(RBER)	8.33	120000					2.439	8200

The reference sensitivity level is < －102dBm.

PCS 1900 Half Rate Speech

The reference sensitivity performance in terms of frame erasure, bit error, or residual bit error rates (whichever is appropriate) is specified in the following table, according to the propagation conditions.

Channels	Propagation Conditions TUhigh		Propagation Conditions RA		Propagation Conditions HT	
	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples	Test Limit error rate %	Minimum No. of samples
TCH/HS FER	4.598	13050				
TCH/HS Class lb(BFI=0)	0.404	148500				
TCH/HS Class II(BFI=0)	7.725	25500	8.500	20000	7.600	20000
TCH/HS(UFR)	6.250	9600				
TCH/HSL class lb((BFI or UFI)=0)	0.269	227000				

6 BLOCK DIAGRAM

6.1. KG190 Base band Hardware Typical application and Block Diagram

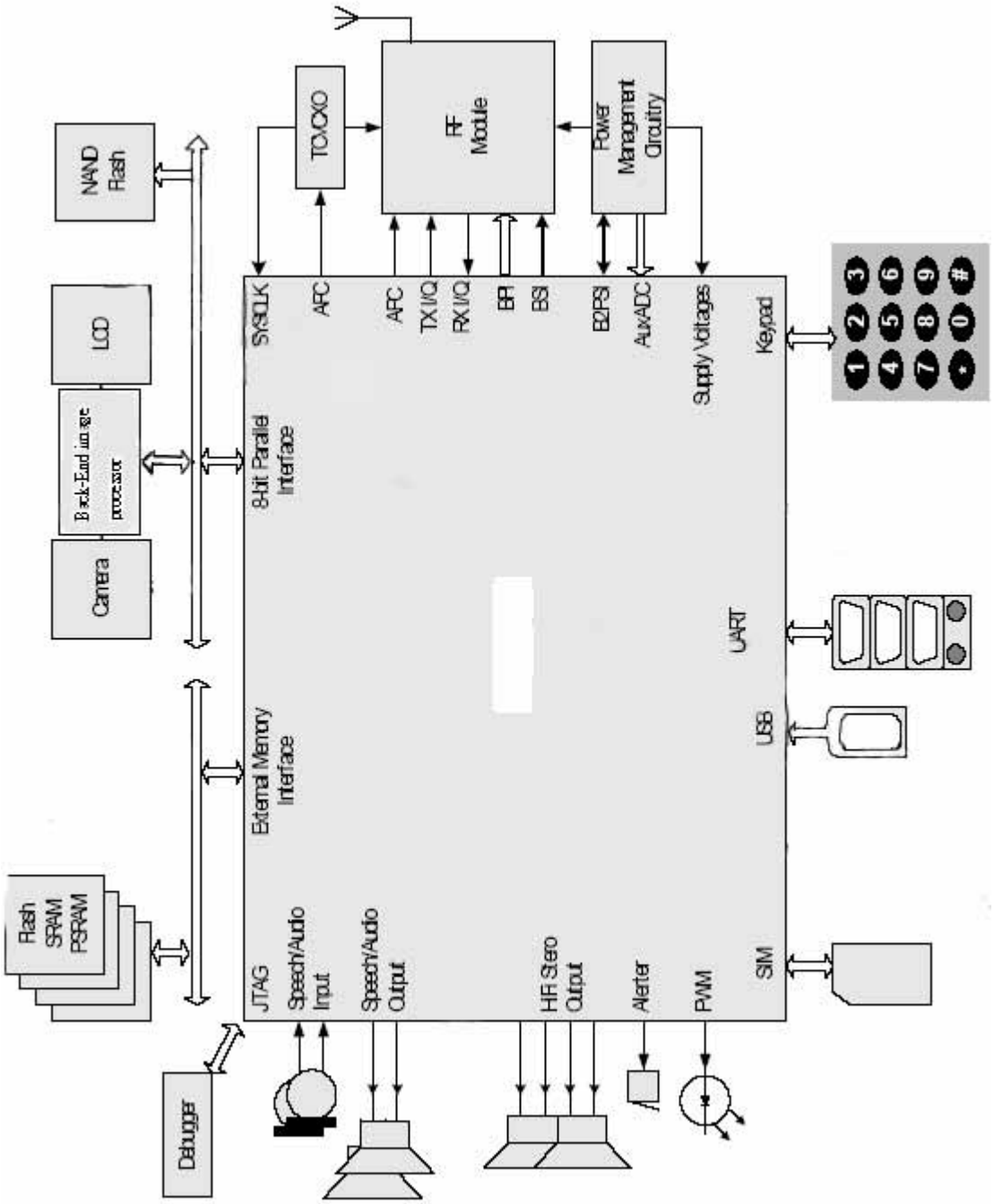


Figure 6.1: Typical application of MT6217

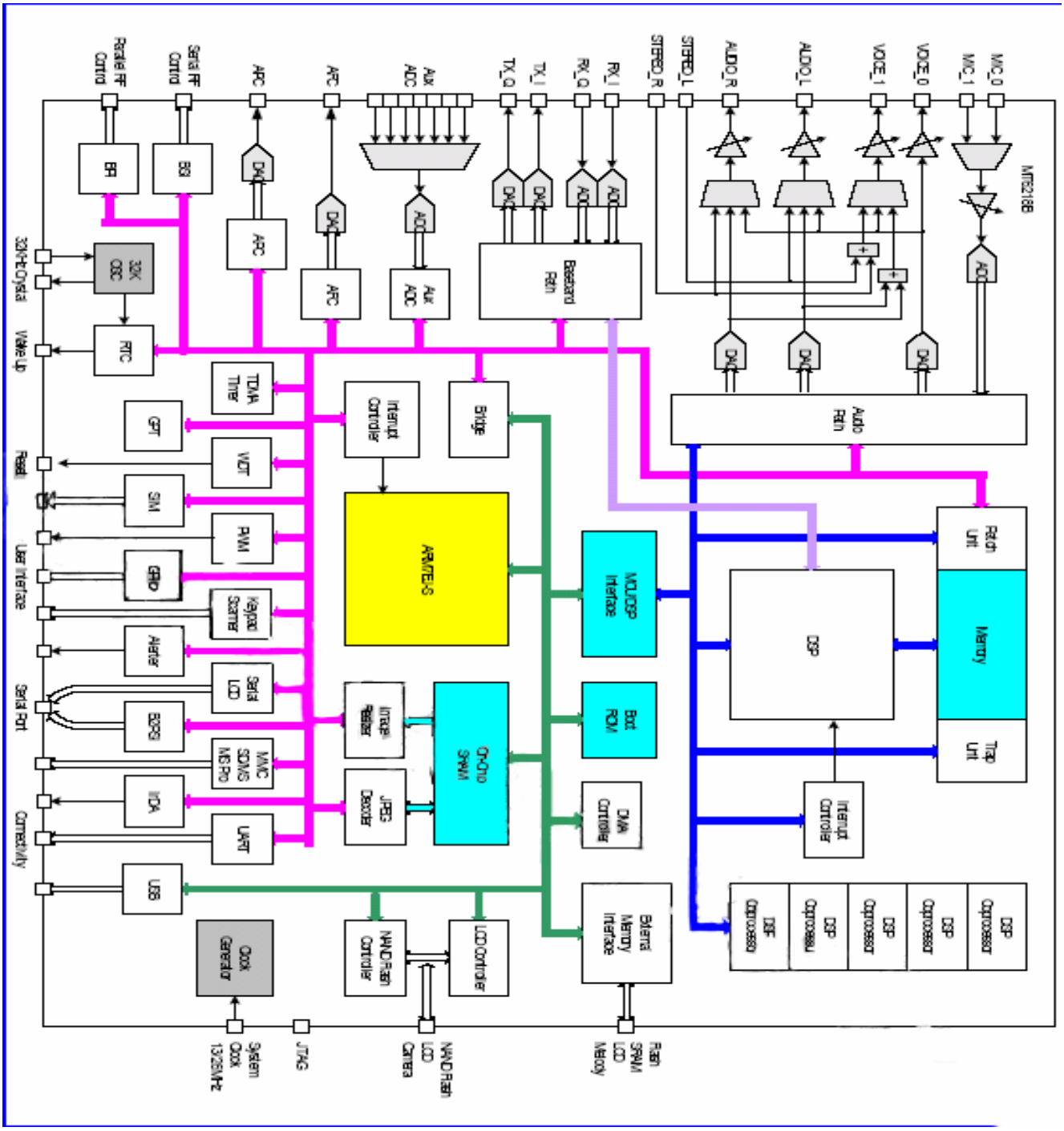


Figure 6.2: MT6217 Block Diagram

6.2. KG190 RF Block Diagram

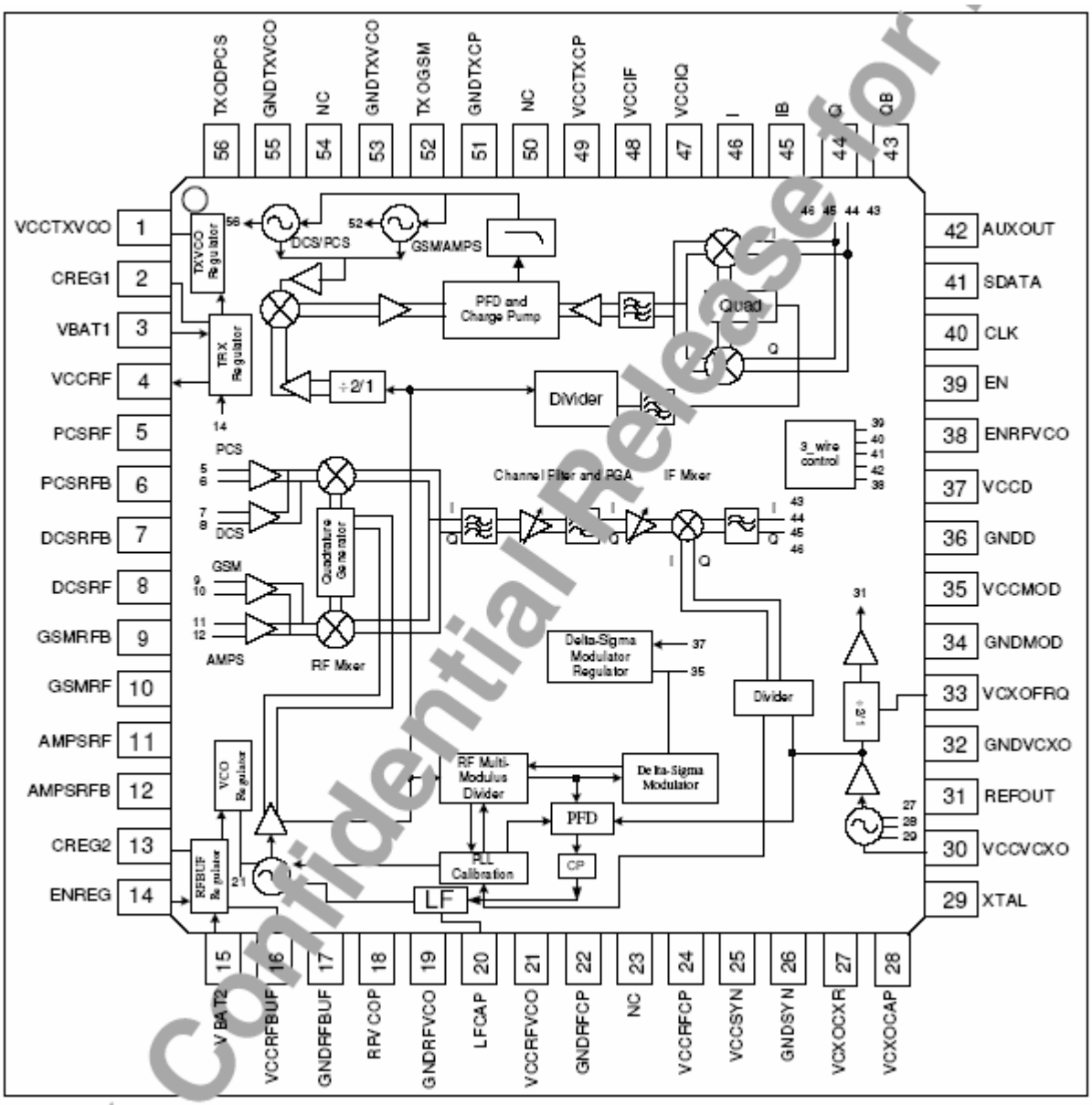
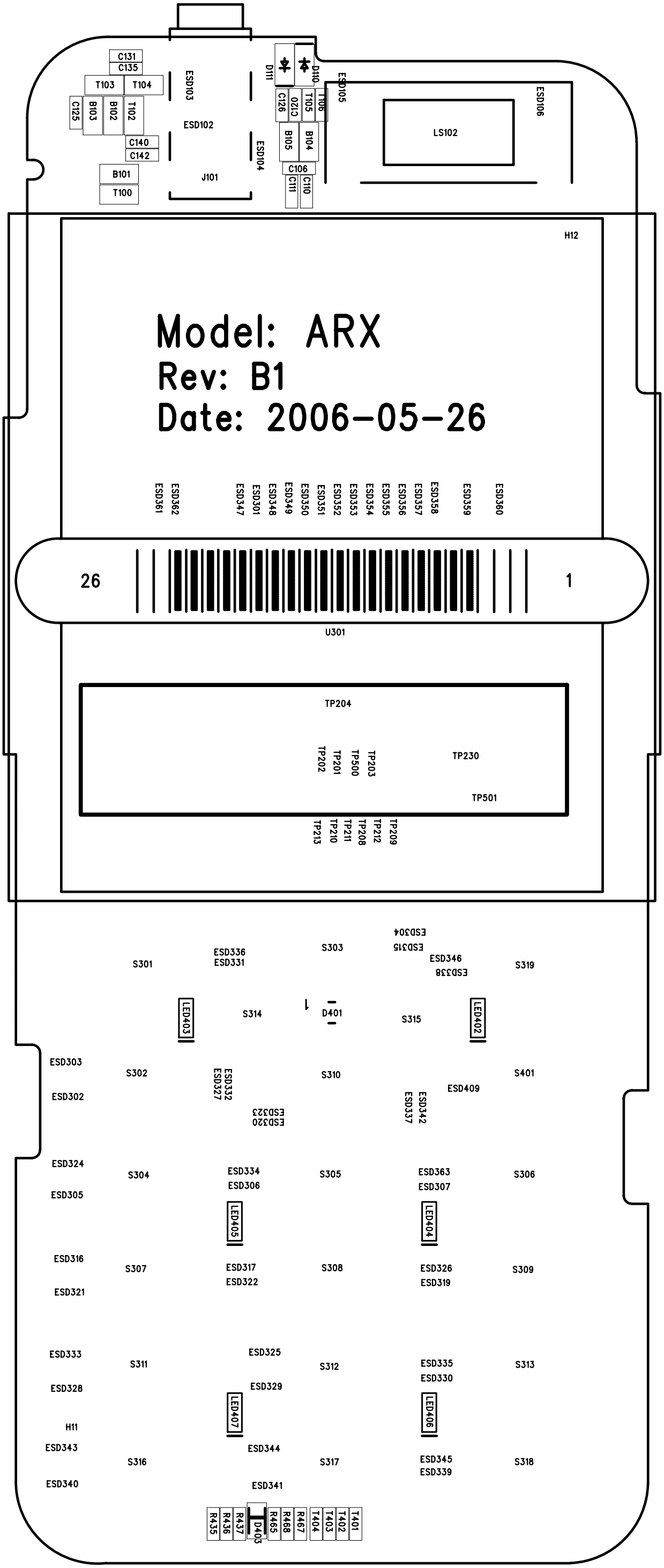


Figure 6.3: MT6120 Block Diagram

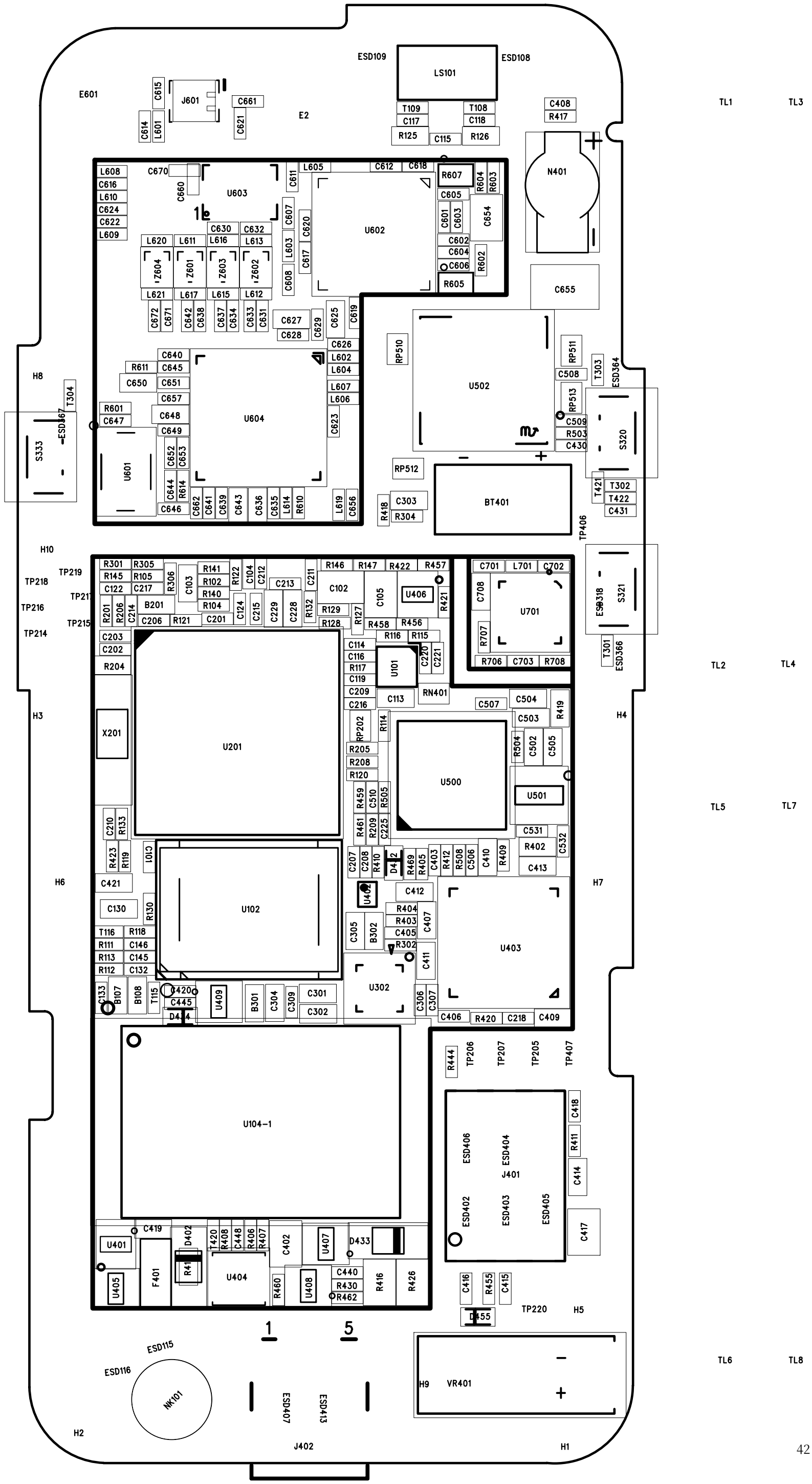
Confidential Release for



41

A

L129 SILKSCREEN BOT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J601
C615
C614
L601
C661
C621
E2
ESD109
LS101
ESD108
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T108
C117
C118
R125
C115
R126
C408
R417
TL1
TL3
N401
L608
C616
L610
C624
C622
L609
C670
C660
U603
C611
L605
C612
C618
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C605
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L617
L615
L612
C655
C672
C671
C642
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C634
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C631
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C628
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C619
C626
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C623
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ESD364
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C644
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C639
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C636
C635
L614
R610
L619
C656
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R304
R418
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T302
T422
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ESD367
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H10
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TP217
TP216
TP215
TP214
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R305
R145
R105
C122
C217
R306
C103
R141
R102
R140
R104
R122
C104
C212
C213
C211
R146
R147
R422
R457
C102
C105
U406
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R201
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C214
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C124
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C229
C228
R132
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R128
R127
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R456
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R115
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R708
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R117
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C209
C216
U101
C220
C221
C113
RN401
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C503
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H4
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U201
RP202
R114
R205
R208
R120
U500
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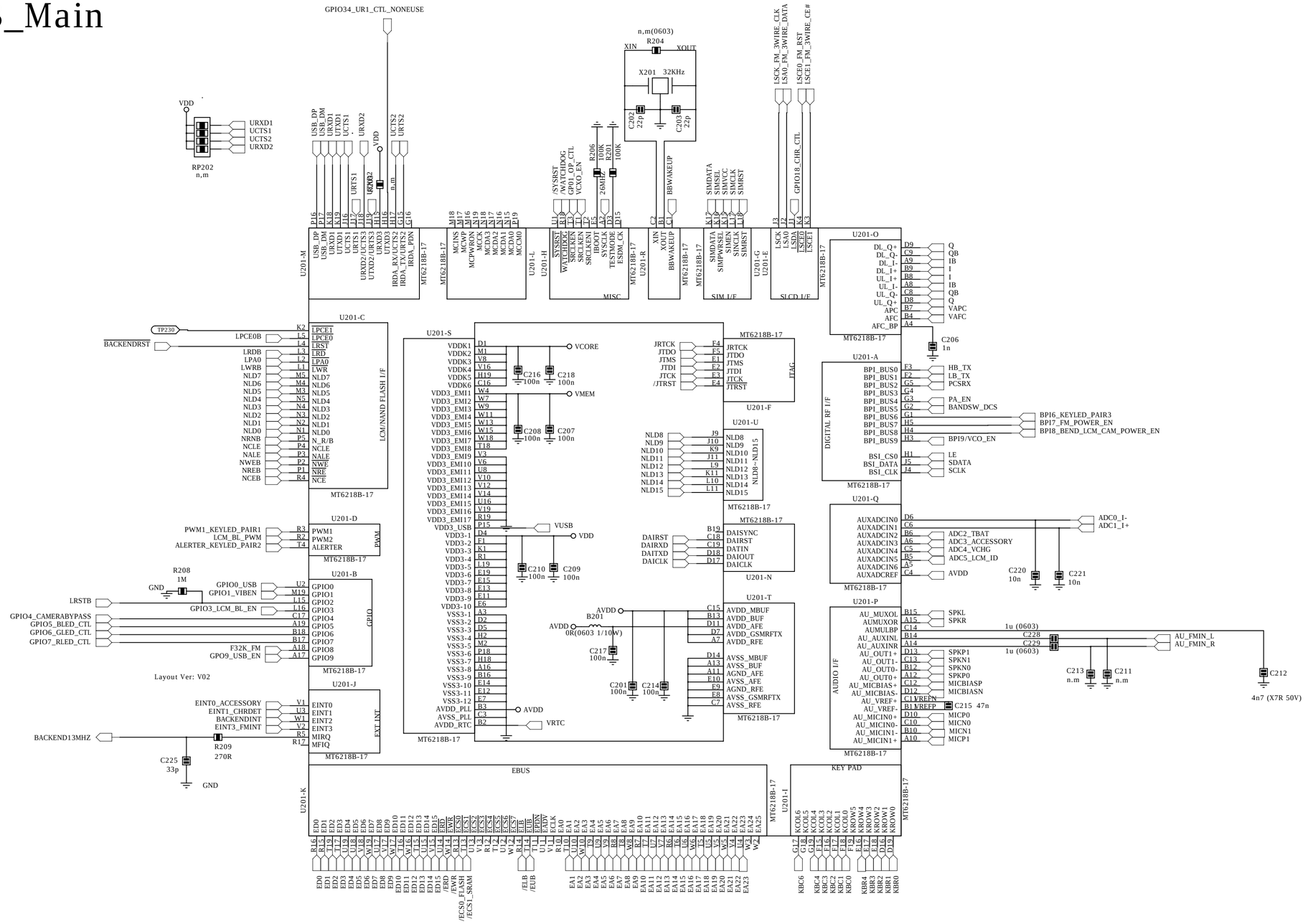
BB_Main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UCTS1
URTS1
URXD2
UTXD2
UCTS2
URTS2
n,m
MT6218B-17
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U201-H
U201-L
U201-R
U201-G
U201-E
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SLCD_I/F
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XOUT
X201 32KHz
C202 22p
C203 22p
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26MHz
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/WATCHDOG
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LSA0_FM_3WIRE_DATA
LSCE0_FM_RST
LSCE1_FM_3WIRE_CE#
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SIMSEL
SIMVCC
SIMCLK
SIMRST
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U201-A
U201-Q
U201-P
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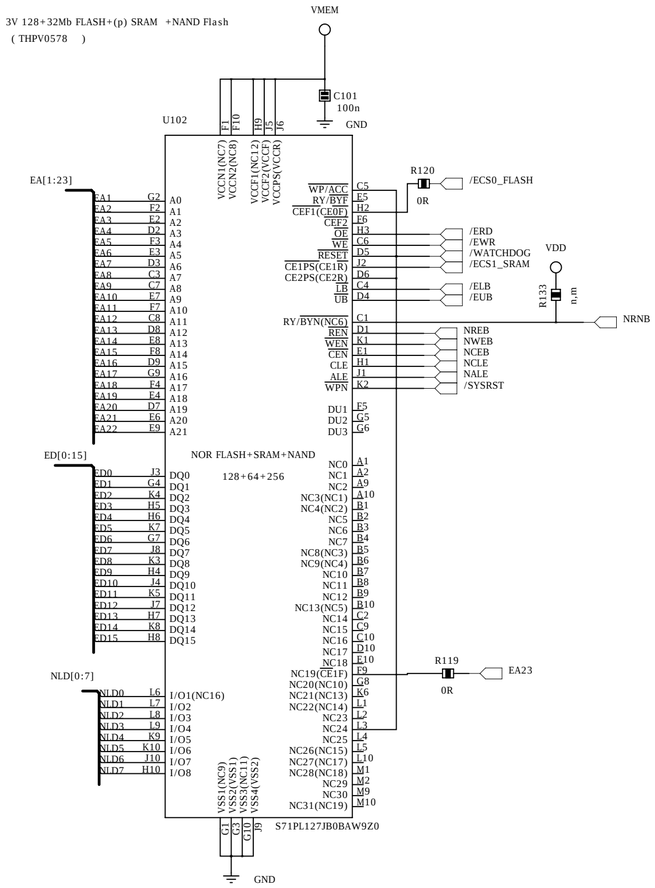
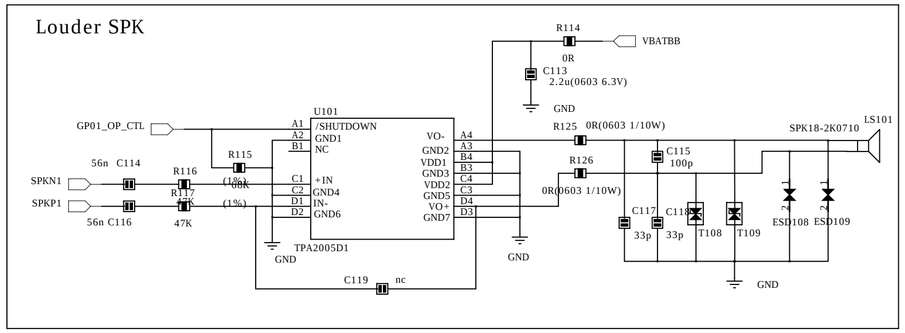
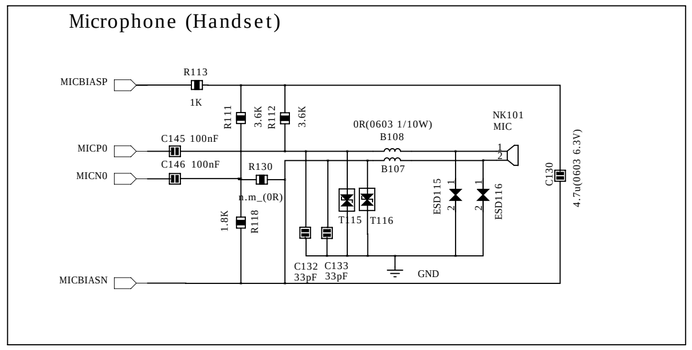
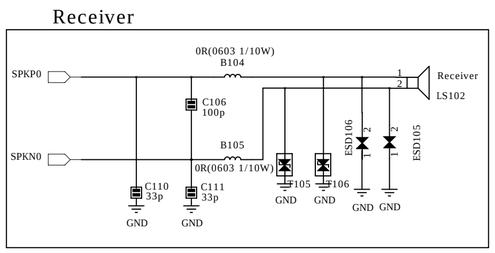
DL_Q-
DL_I-
DL_I+
UL_I+
UL_I-
UL_Q-
UL_Q+
APC
AFC
AFC_BP
C206 1n
DIGITAL RF I/F
BPI_BUS0
BPI_BUS1
BPI_BUS2
BPI_BUS3
BPI_BUS4
BPI_BUS5
BPI_BUS6
BPI_BUS7
BPI_BUS8
BPI_BUS9
HB_TX
LB_TX
PCSRX
PA_EN
BANDSW_DCS
BPI6_KEYLED_PAIR3
BPI7_FM_POWER_EN
BPI8_BEND_LCM_CAM_POWER_EN
BPI9/VCO_EN
BS1_CS0
BSI_DATA
BSI_CLK
LE
SDATA
SCLK
AUXADCIN0
AUXADCIN1
AUXADCIN2
AUXADCIN3
AUXADCIN4
AUXADCIN5
AUXADCIN6
AUXADCREF
ADC0_I-
ADC1_I+
ADC2_TBAT
ADC3_ACCESSORY
ADC4_VCHG
ADC5_LCM_ID
AVDD
C220 10n
C221 10n
AUDIO I/F
AU_MUXOL
AUMUXOR
AUMULBP
AU_AUXINL
AU_AUXINR
AU_OUT1+
AU_OUT1-
AU_OUT0-
AU_OUT0+
AU_MICBIAS+
AU_MICBIAS-
AU_VREF+
AU_VREF-
AU_MICIN0+
AU_MICIN0-
AU_MICIN1-
AU_MICIN1+
SPKL
SPKR
SPKP1
SPKN1
SPKN0
SPKP0
MICBIASP
MICBIASN
C215 47n
MICP0
MICN0
MICN1
MICP1
1u (0603)
C228
C229
AU_FMIN_L
AU_FMIN_R
C213 n.m
C211 n.m
C212 4n7 (X7R 50V)
U201-C
U201-S
U201-U
U201-F
U201-N
U201-T
TP230
BACKENDRST
LPCE0B
LRDB
LPA0
LWRB
NLD7
NLD6
NLD5
NLD4
NLD3
NLD2
NLD1
NLD0
NRNB
NCLE
NALE
NWEB
NREB
NCEB
LPCE1
LPCE0
LRST
LRD
LPA0
LWR
NLD7
NLD6
NLD5
NLD4
NLD3
NLD2
NLD1
NLD0
N_R/B
NCLE
NALE
NWE
NRE
NCE
LCM/NAND FLASH I/F
VDD1-1
VDD1-2
VDD3-1
VDD3-2
VDD3-3
VDD3-4
VDD3-5
VDD3-6
VDD3-7
VDD3-8
VDD3-9
VDD3-10
VDD3_USB
VSS3-1
VSS3-2
VSS3-3
VSS3-4
VSS3-5
VSS3-6
VSS3-7
VSS3-8
VSS3-9
VSS3-10
VSS3-11
VSS3-12
AVDD_PLL
AVSS_PLL
AVDD_RTC
VCORE
VMEM
VUSB
VDD
AVDD
VRTC
C216 100n
C218 100n
C208 100n
C207 100n
C210 100n
C209 100n
C217 100n
C201 100n
C214 100n
JTRCK
JTDO
JTMS
JTDI
JTCK
/JTRST
JTAG
NLD8
NLD9
NLD10
NLD11
NLD12
NLD13
NLD14
NLD15
NLD8~NLD15
DAISYNC
DAIRST
DATIN
DAIOUT
DAICLK
DAIRST
DAIRXD
DAITXD
DAICLK
AVDD_MBUF
AVDD_BUF
AVDD_AFE
AVDD_GSMRFTX
AVDD_RFE
AVSS_MBUF
AVSS_BUF
AGND_AFE
AVSS_AFE
AGND_RFE
AVSS_GSMRFTX
AVSS_RFE
B201
0R(0603 1/10W)
U201-D
U201-B
U201-J
PWM1_KEYLED_PAIR1
LCM_BL_PWM
ALERTER_KEYLED_PAIR2
PWM1
PWM2
ALERTER
PWM
R208 1M
GND
LRSTB
GPIO0_USB
GPIO1_VIBEN
GPIO3_LCM_BL_EN
GPIO4_CAMERABYPASS
GPIO5_BLED_CTL
GPIO6_GLED_CTL
GPIO7_RLED_CTL
F32K_FM
GPO9_USB_EN
GPIO0
GPIO1
GPIO2
GPIO3
GPIO4
GPIO5
GPIO6
GPIO7
GPIO8
GPIO9
GPIO
Layout Ver: V02
EINT0_ACCESSORY
EINT1_CHRDET
BACKENDINT
EINT3_FMINT
BACKEND13MHZ
EINT0
EINT1
EINT2
EINT3
MIRQ
MFIQ
EXT INT
R209 270R
C225 33p
U201-K
U201-I
EBUS
KEY PAD
ED0
ED1
ED2
ED3
ED4
ED5
ED6
ED7
ED8
ED9
ED10
ED11
ED12
ED13
ED14
ED15
/ERD
/EWR
/ECS0_FLASH
/ECS1_SRAM
/ELB
/EUB
EA1
EA2
EA3
EA4
EA5
EA6
EA7
EA8
EA9
EA10
EA11
EA12
EA13
EA14
EA15
EA16
EA17
EA18
EA19
EA20
EA21
EA22
EA23
KCOL6
KCOL5
KCOL4
KCOL3
KCOL2
KCOL1
KCOL0
KROW5
KROW4
KROW3
KROW2
KROW1
KROW0
KBC6
KBC4
KBC3
KBC2
KBC1
KBC0
KBR4
KBR3
KBR2
KBR1
KBR0

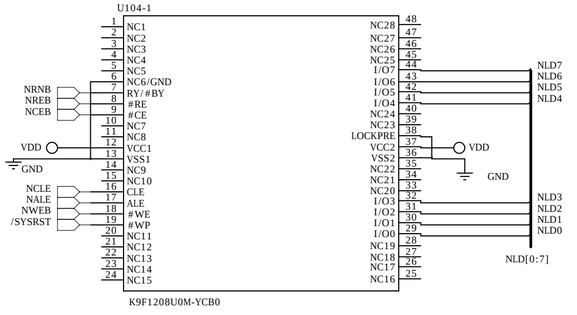
Memory and Audio

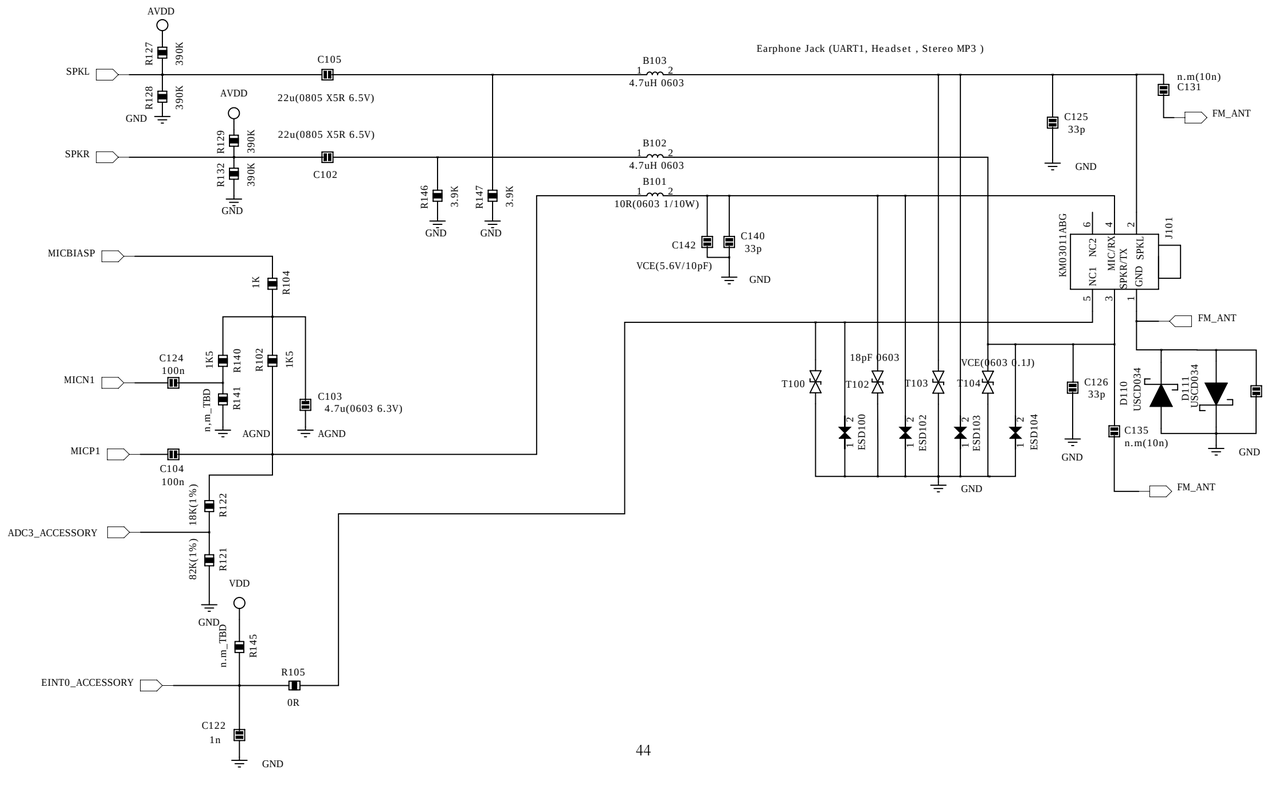




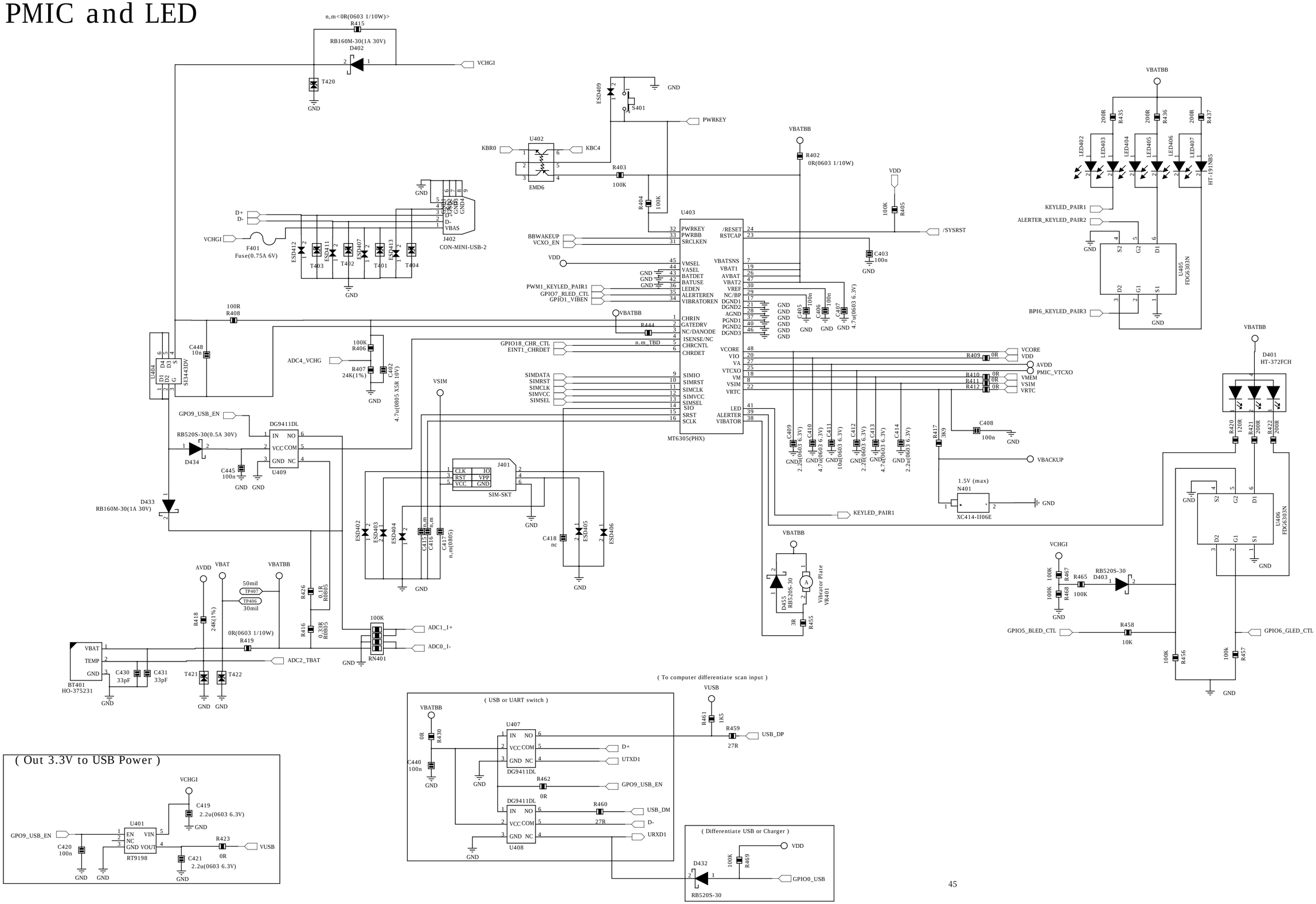




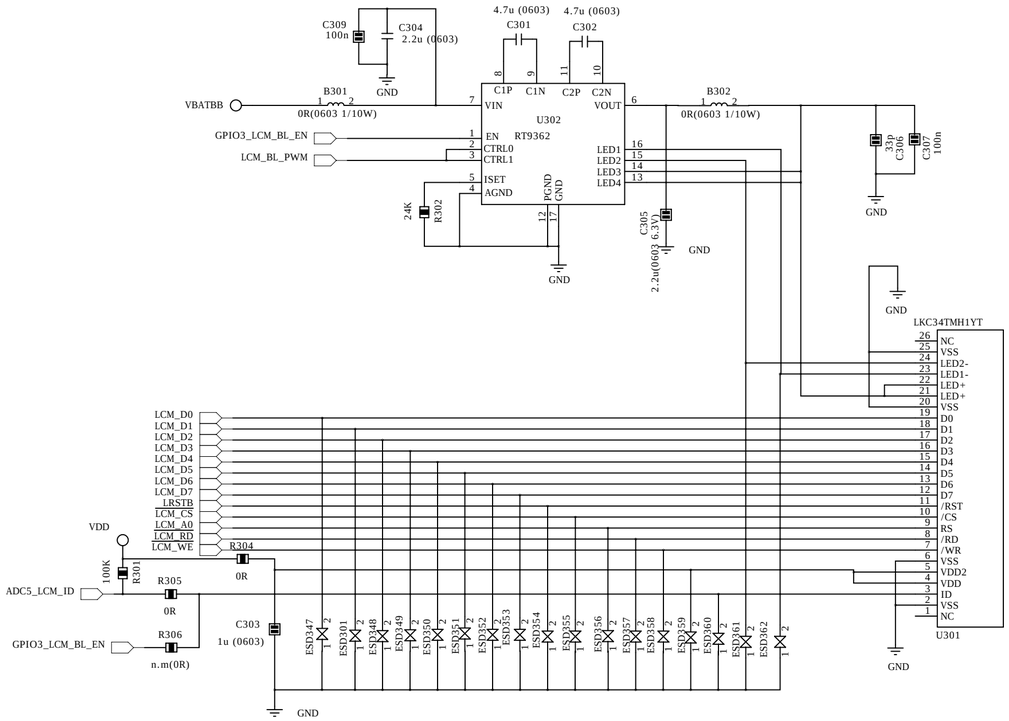


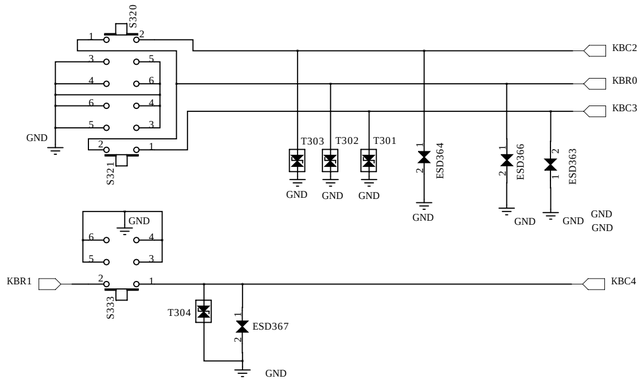


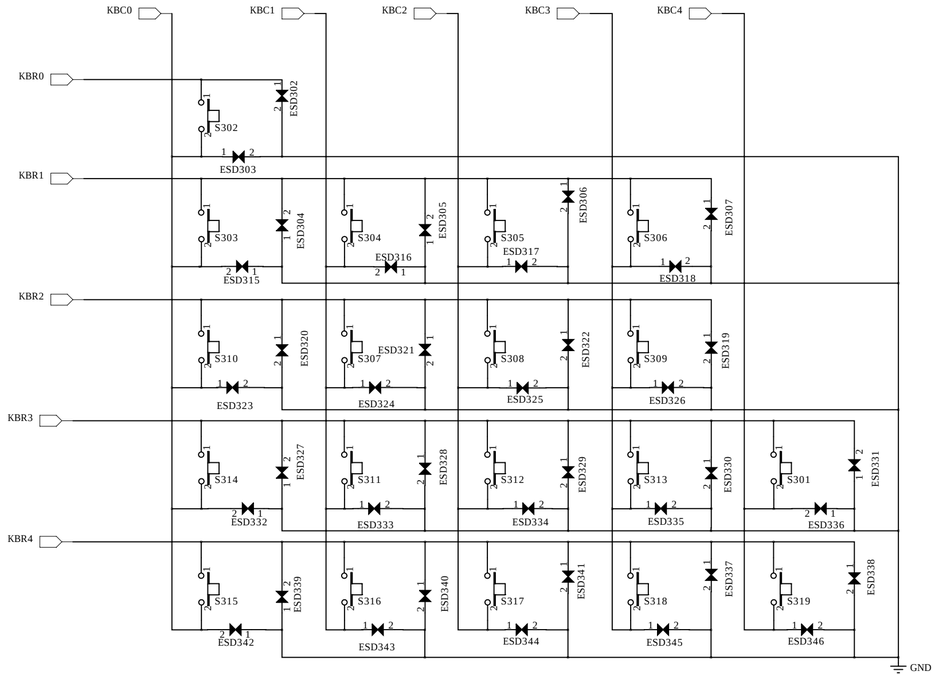
PMIC and LED


n,m<0R(0603 1/10W)>
R415
RB160M-30(1A 30V)
D402
VCHGI
T420
GND
ESD409
S401
PWRKEY
U402
KBR0
KBC4
EMD6
R403
100K
R404
100K
VBATTB
R402
0R(0603 1/10W)
VDD
100K
R405
/SYSRST
C403
100n
U403
PWRKEY
PWRBB
SRCLKEN
BBWAKEUP
VCXO_EN
VDD
VMSEL
VASEL
BATDET
BATUSE
LEDEN
ALERTEREN
VIBRATOREN
PWM1_KEYLED_PAIR1
GPIO7_RLED_CTL
GPIO1_VIBEN
CHRIN
GATEDRV
NC/DANODE
ISENSE/NC
CHRCNTL
CHRDET
GPIO18_CHR_CTL
EINT1_CHRDET
SIMDATA
SIMRST
SIMCLK
SIMVCC
SIMSEL
SIO
SRST
SCLK
/RESET
RSTCAP
VBATSNS
VBAT1
AVBAT
VBAT2
VREF
NC/BP
DGND1
DGND2
AGND
PGND1
PGND2
DGND3
VCORE
VIO
VA
VTCXO
VM
VSIM
VRTC
LED
ALERTER
VIBATOR
MT6305(PHX)
R444
n,m_TBD
C405
C406
C407
4.7u(0603 6.3V)
R409
0R
VCORE
VDD
AVDD
PMIC_VTCXO
R410
R411
R412
VMEM
VSIM
VRTC
C408
100n
R417
3K9
VBACKUP
1.5V (max)
N401
XC414-I106E
KEYLED_PAIR1
C409
C410
C411
C412
C413
C414
2.2u(0603 6.3V)
4.7u(0603 6.3V)
10u(0603 6.3V)
2.2u(0603 6.3V)
4.7u(0603 6.3V)
2.2u(0603 6.3V)
VBATTB
LED402
LED403
LED404
LED405
LED406
LED407
HT-191NB5
200R
R435
R436
R437
KEYLED_PAIR1
ALERTER_KEYLED_PAIR2
BPI6_KEYLED_PAIR3
U405
FDG6303N
S2
G2
D1
D2
G1
S1
GND
D401
HT-372FCH
R420
120R
R421
200R
R422
200R
U406
FDG6303N
D+
D-
VCHGI
F401
Fuse(0.75A 6V)
J402
CON-MINI-USB-2
VBAS
ESD412
ESD411
ESD407
ESD413
T403
T402
T401
T404
100R
R408
C448
10n
U404
SI3443DV
ADC4_VCHG
100K
R406
R407
24K(1%)
C402
4.7u(0805 X5R 10V)
VSIM
J401
CLK
RST
VCC
IO
VPP
GND
SIM-SKT
ESD402
ESD403
ESD404
C415 n,m
C416 n,m
C417
n,m(0805)
C418
nc
ESD405
ESD406
GPO9_USB_EN
DG9411DL
RB520S-30(0.5A 30V)
D434
C445
100n
U409
D433
RB160M-30(1A 30V)
AVDD
VBAT
VBATTB
50mil
TP407
TP406
30mil
R426
0.1R
R0805
R418
24K(1%)
R416
0.33R
R0805
0R(0603 1/10W)
R419
100K
ADC1_I+
ADC0_I-
ADC2_TBAT
RN401
VBAT
TEMP
GND
BT401
HO-375231
C430
33pF
C431
33pF
T421
T422
D455
RB520S-30
3R
R455
Vibrator Plate
VR401
(To computer differentiate scan input)
(USB or UART switch)
VUSB
R461
1K5
R459
27R
USB_DP
U407
IN
NO
VCC
COM
GND
NC
DG9411DL
D+
UTXD1
R462
0R
GPO9_USB_EN
R460
27R
USB_DM
D-
URXD1
U408
R430
0R
C440
100n
(Differentiate USB or Charger)
D432
RB520S-30
100K
R469
VDD
GPIO0_USB
(Out 3.3V to USB Power)
VCHGI
C419
2.2u(0603 6.3V)
U401
EN
NC
GND
VIN
VOUT
RT9198
C420
100n
C421
2.2u(0603 6.3V)
R423
0R
VUSB
VCHGI
100K
R467
100K
R468
R465
100K
RB520S-30
D403
GPIO5_BLED_CTL
R458
10K
GPIO6_GLED_CTL
100K
R456
100k
R457

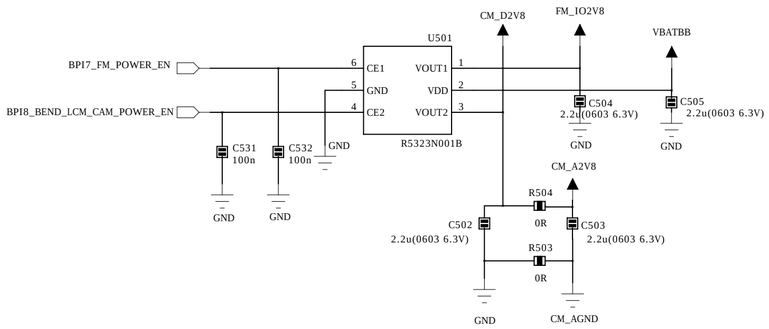
LCD and KEYPAD

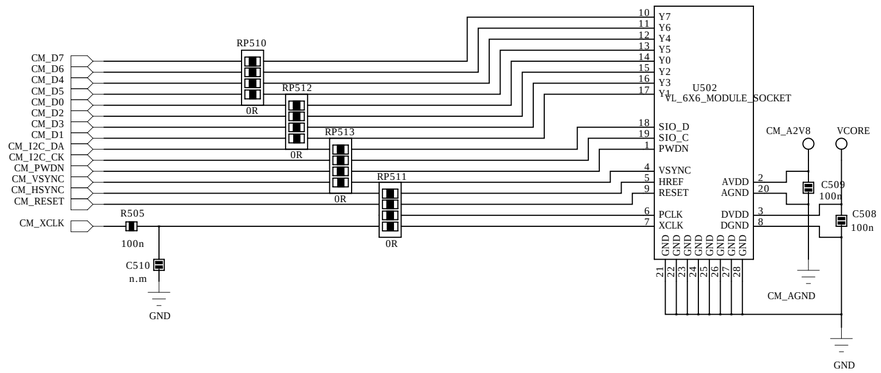


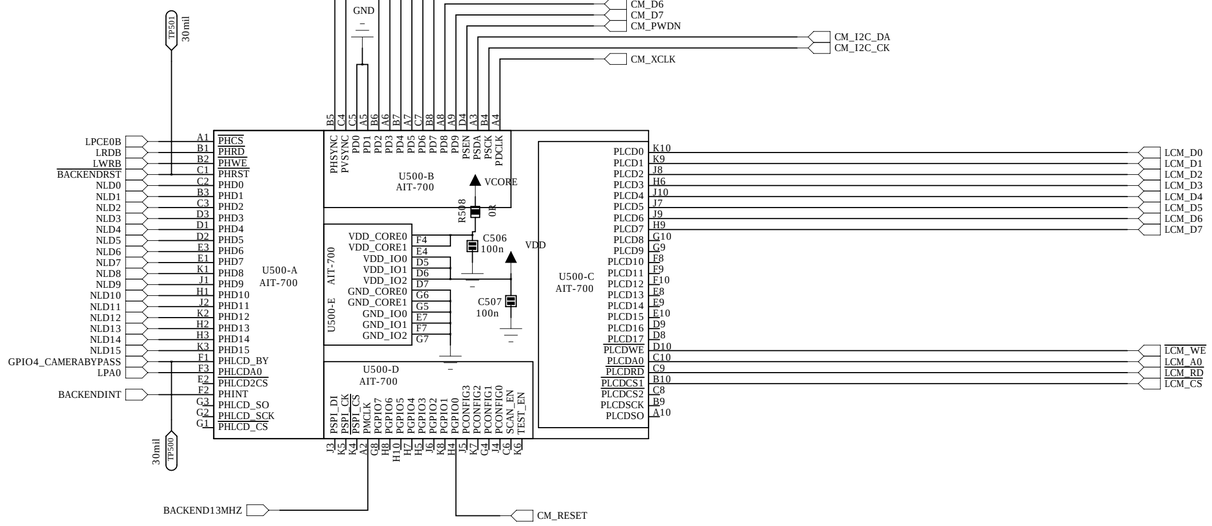




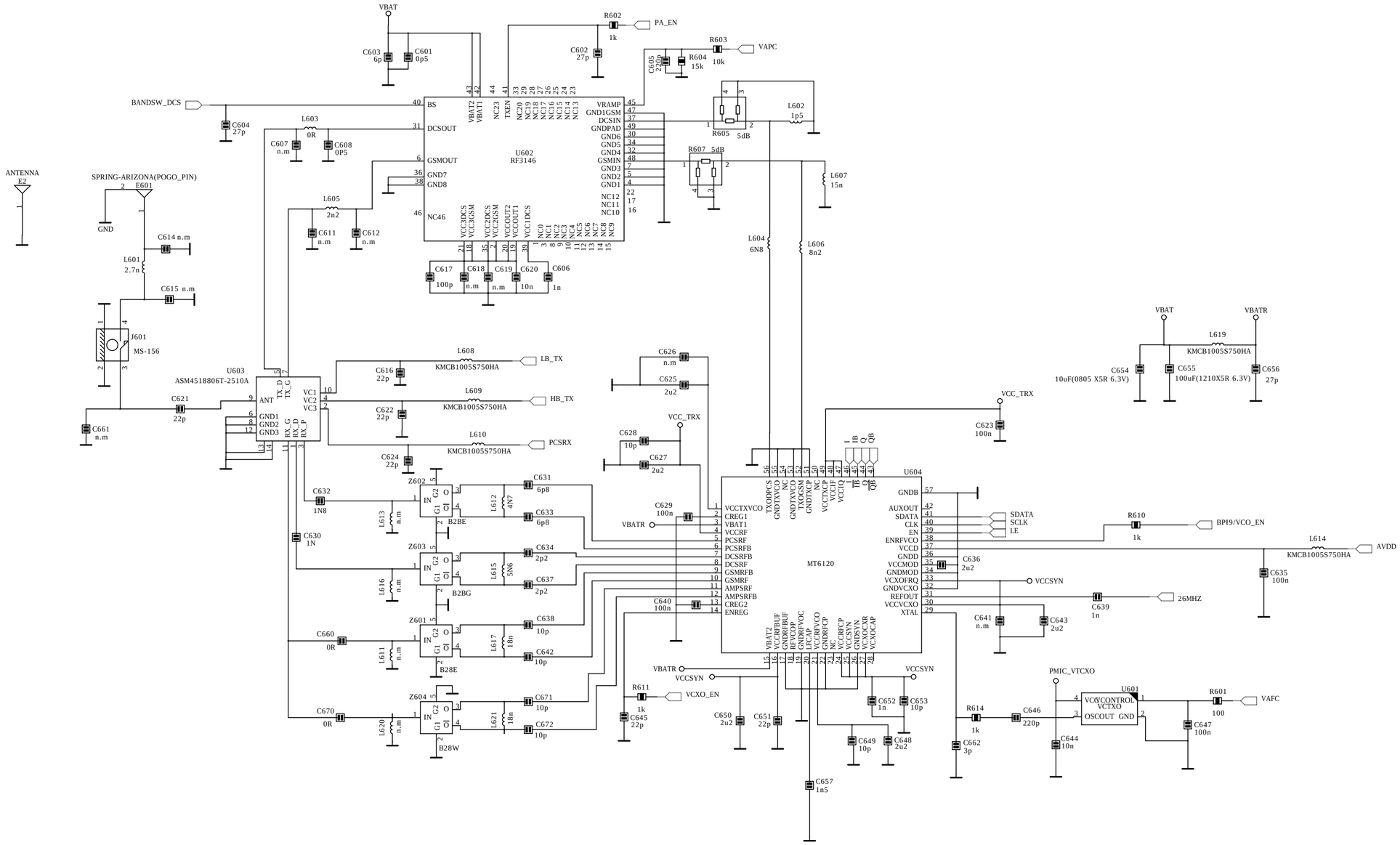
CMOS


U501
BPI7_FM_POWER_EN
BPI8_BEND_LCM_CAM_POWER_EN
CE1
GND
CE2
VOUT1
VDD
VOUT2
R5323N001B
CM_D2V8
FM_IO2V8
VBATBB
C504
2.2u(0603 6.3V)
C505
2.2u(0603 6.3V)
C531
100n
C532
100n
GND
CM_A2V8
R504
0R
C502
2.2u(0603 6.3V)
C503
2.2u(0603 6.3V)
R503
0R
CM_AGND

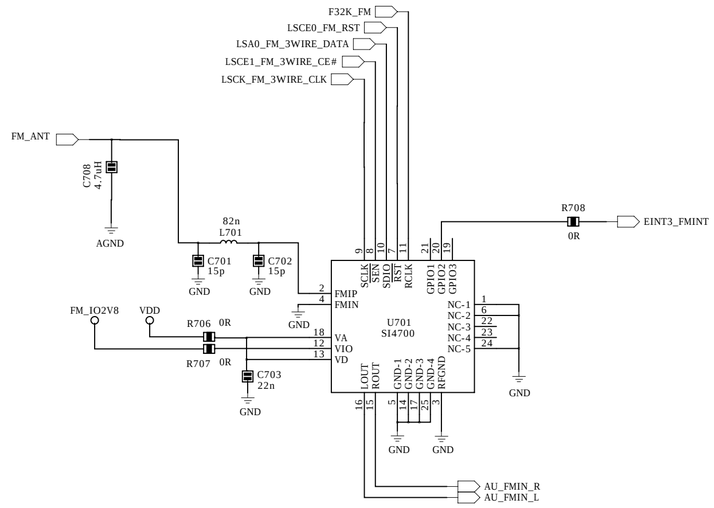

CM_D7
CM_D6
CM_D4
CM_D5
CM_D0
CM_D2
CM_D3
CM_D1
CM_I2C_DA
CM_I2C_CK
CM_PWDN
CM_VSYNC
CM_HSYNC
CM_RESET
CM_XCLK
RP510
RP512
RP513
RP511
0R
R505
100n
C510
n.m
U502
TL_6X6_MODULE_SOCKET
SIO_D
SIO_C
PWDN
VSYNC
HREF
RESET
PCLK
XCLK
AVDD
AGND
DVDD
DGND
CM_A2V8
VCORE
C509
100n
C508
100n
CM_AGND


TP501
30mil
CM_HSYNC
CM_VSYNC
CM_D0
CM_D1
CM_D2
CM_D3
CM_D4
CM_D5
CM_D6
CM_D7
CM_PWDN
CM_I2C_DA
CM_I2C_CK
CM_XCLK
GND
LPCE0B
LRDB
LWRB
BACKENDRST
NLD0
NLD1
NLD2
NLD3
NLD4
NLD5
NLD6
NLD7
NLD8
NLD9
NLD10
NLD11
NLD12
NLD13
NLD14
NLD15
GPIO4_CAMERABYPASS
LPA0
BACKENDINT
PHCS
PHRD
PHWE
PHRST
PHD0
PHD1
PHD2
PHD3
PHD4
PHD5
PHD6
PHD7
PHD8
PHD9
PHD10
PHD11
PHD12
PHD13
PHD14
PHD15
PHLCD_BY
PHLCDA0
PHLCD2CS
PHINT
PHLCD_SO
PHLCD_SCK
PHLCD_CS
U500-A
AIT-700
U500-B
AIT-700
U500-C
AIT-700
U500-D
AIT-700
U500-E
AIT-700
VCORE
R508
0R
C506
100n
VDD
C507
100n
PLCD0
PLCD1
PLCD2
PLCD3
PLCD4
PLCD5
PLCD6
PLCD7
PLCD8
PLCD9
PLCD10
PLCD11
PLCD12
PLCD13
PLCD14
PLCD15
PLCD16
PLCD17
PLCDWE
PLCDA0
PLCDRD
PLCDCS1
PLCDCS2
PLCDSCK
PLCDSO
LCM_D0
LCM_D1
LCM_D2
LCM_D3
LCM_D4
LCM_D5
LCM_D6
LCM_D7
LCM_WE
LCM_A0
LCM_RD
LCM_CS
BACKEND13MHZ
CM_RESET

RF


ANTENNA
E2
SPRING-ARIZONA(POGO_PIN)
E601
GND
J601
MS-156
U603
ASM4518806T-2510A
U602
RF3146
MT6120
U604
U601
VBAT
VBATR
VCC_TRX
VCCSYN
PMIC_VTCXO
BANDSW_DCS
PA_EN
VAPC
SDATA
SCLK
LE
BPI9/VCO_EN
AVDD
26MHZ
VAFC
VCXO_EN
LB_TX
HB_TX
PCSRX
B2BE
B2BG
B28E
B28W
KMCB1005S750HA

FM


F32K_FM
LSCE0_FM_RST
LSA0_FM_3WIRE_DATA
LSCE1_FM_3WIRE_CE#
LSCK_FM_3WIRE_CLK
FM_ANT
C708
4.7nH
AGND
82n
L701
C701
15p
C702
15p
GND
GND
R708
0R
EINT3_FMINT
FM_IQ2V8
VDD
R706 0R
R707 0R
C703
22n
GND
GND
U701
SI4700
SCLK
SDIO
SDIO
RST
RCLK
GPIO1
GPIO2
GPIO3
FMIP
FMIN
VA
VIO
VD
LOUT
ROUT
GND-1
GND-2
GND-3
GND-4
RFGND
NC-1
NC-2
NC-3
NC-4
NC-5
GND
GND
GND
AU_FMIN_R
AU_FMIN_L

9. SPPL for LG – KG190

Version : 1A

ITEM	Darts P/No.	Description	Mini. Q'ty	Location	SVC 여부	LG part number
	Chip Set					
1	2255-6217-3080	RISC PROCESSOR,TFBGA,282P	100	U201	OK	
2	225K-T700-1080	BACKEND IC,TFBGA,96P,AIT700G/CN1-G	100	U500	OK	
3	2257-6305-2080	DS,IC,POWER MANAGEMENT,QFN48,48PS	100	U403	OK	
4	2259-RF31-2000	POWER AMPLIFIER RF3146 LFM 48P	100	U602	OK	
5	2256-6120-1080	DS,IC,RF TRANSCEIVER,QFN,56P	100	U604	OK	
	Memory					
5	2651-00FS-0080	FLASH+SRAM,128+32,S71PL127JB0BFW9U0	200	U102	OK	
6	2252-9F12-5080	NAND FLASH,TSOP1,48P,64*8,K9F1208U0M-PCB0	200	U104	OK	
	RF					
7	0942-5026-1082	X'TAL,26MHz,2.8V,0.5%,7P26000132,TXC	500	U601	OK	
8	225W-ASM5-2080	SWITCH,ASM4518806T-2510A	500	U603	OK	
9	0945-9425-0183	,RF FILTER,942.5MHZ ,5P,F5EB-942M50-B28E,	500	Z601	OK	
10	0945-1960-0183	RF FILTER,1960MHz,5P,F6EB-1G9600-B2BE	500	Z602	OK	
11	0945-1842-5183	RF FILTER,1842.5MHz,5P,F6EB-1G8425-B2BG	500	Z603	OK	
	BB					
12	220S-1020-0081	SWITCH,SIDE KEY,20MA/12V,6P,SOH-213HST	500	S320,S321,S333	OK	
13	0942-6001-1000	TUNING FORK CRYSTAL,32.768KHZ,20ppm,12.5pF	500	X201	OK	
14	225R-5323-5080	REGULATOR,SOT-23-6,6P,R5323N001B-TR-F	500	U501	OK	
15	2258-2005-2080	AUDIO AMPLIFIER,ZQY,15P,TPA2005D1ZQYR	500	U101	OK	
16	225F-4700-2080	FM MODULE,QFN,24P,SI4700-A09-GMR,SILICON	500	U701	OK	
17	2263-6303-0684	MOSFET,SC70-6,6P,FDG6303N-NL,FAIRCHILD	500	U405,U406	OK	
18	225W-9411-1080	SWITCH,SC70-6,6p,DG9411DL-T1-E3	500	U407,U408,U409	OK	
19	2262-EMD6-0681	DOUBLE TRANSISTORS EMD6 PNP+NPN	500	U402	OK	
20	225C-9362-2080	DC-DCCONVERTER,QFN-16L,3X3,16P	500	U302	OK	
21	2263-3443-0685	MOSFET Si3443DV-T1-E3 SOT-6 LF	500	U404	OK	
22	225R-9198-1080	REGULATOR,SC-70-5,5P,3.3V,RT9198-33PU5	500	U401	OK	
23	221C-SK20-0186	DS,ME,CONN.,SOCKET,20PIN,CLE9020-0102F	500	U502	OK	
24	2257-MLVS-1000	VCE MLVS0402M07 +-20% 7V 0402	500	T105,T106,T108, T109,T115,T116, T301,T302,T303,	OK	

				T304,T401,T402, T403,T404,T420, T421,T422		
25	2257-MLVS-2000	VCE MLVS0603K14 +-10% 14V 0603	500	T100,T103,T104	OK	
26	2265-3010-0582	LED R G B HT-372FCH-DT	500	D401	OK	
27	2265-B040-0286	LED,L=B,AOT-0603P-B110-HS	500	LED402~D407	OK	
	EME -SMT					
28	220B-0010-0000	BACKUP BATT D4.8xH1.4mm 0.06F XC414-II06E	200	N401	OK	
29	221J-EP06-0988	EARPHONE JACK KM03011ABGS1 6P	200	J101	OK	
30	220S-2010-0081	SWITCH,RF TEST SWITCH,6000MHz 2W	200	J601	OK	
31	221C-SC06-0182	CONN.,SIM CARD CONN.,6PIN,217+010+606,ACT	200	J401	OK	
32	221C-IN05-0185	CONN.,I/O CONN.,5PIN,US25R05-SBS	200	J402	OK	
33	221C-SP02-0186	SPEK CONN P=3mm 2P CBE-2809-2258H	200	LS101	OK	
34	221C-PG01-0181	POGO PIN 1P CDR-5815-2961	200	E2	OK	
35	2212-BC18-0000	BASE BABD COVER	200		OK	
36	2212-BF18-0000	BASE BABD FRAME	200		OK	
37	2212-RC18-0000	RF COVER	200		OK	
38	2212-RF18-0000	RF FRAME	200		OK	
	Antenna Ass'y					
39	2285-3187-0000	ASS'Y,ANTENNA	100		OK	
	Top case Ass'y					
40	2206-1110-0001	RECEIVER RECTANGLE,L1.5xW0.6xH3.8	100		OK	
41	2218-1800-6280	KEYPAD,ARI,RU,SILVER,MM-OB613S-40CHA	100		OK	
42	2211-SE18-1100	SIDE KEY CASE,ARI,SILVER,FOR 2 WAY	100		OK	
43	2211-SE18-0100	SIDE KEY CASE,ARI,SILVER,FOR 1 WAY	100		OK	
44	2211-DP18-1100	DECORATE PLATE,ARI,D-BLUE,FOR SIDE-L	100		OK	
45	2211-DP18-2100	DECORATE PLATE,ARI,D-BLUE,FOR SIDE-R	100		OK	
46	2211-DP18-3100	DECORATE PLATE,ARI,D-BLUE,FOR LENS	100		OK	
	Bottom case Ass'y					
	221C-BA03-0102	BATT CONN PITCH=2.50mm 3P PA08303	100		OK	
47	2206-5030-0083	MIC,OBG-15S42-C1033	100		OK	
48	2207-0030-0003	VIBRATOR,3V,13x6x5.3mm,S408J-810255-1	100		OK	
	ME Ass'y					
49	2206-6020-0088	SPEAKER,DMS1508C-11-PC-F3-G	100		OK	
50	2214-MF13-3Z81	SCREW,D2.4XM1.6X3.8,ZN,WHITE	100		OK	
51	2213-TR18-0100	OTHER,TPR,ARI,SILVER,FOR RF CAP	100		OK	
52	2213-TR18-2100	OTHER,TPR,ARI,SILVER,FOR USB CAP	100		OK	
53	2213-TR18-1100	OTHER,TPR,ARI,SILVER,FOR PHONE JACK CAP	100		OK	

54	2212-DM18-0000	DS,ME,METAL,DOME,ARI	100		OK	
55	2221-1341-0082	LCM,STN,128*128dot,26P,LKC34TML8Y2	100		OK	
56	2211-BA18-0100	BAT.COVER	100		OK	
	Accessory					
57	220A-1800-7080	BATT PACK	50		OK	
58	2237-22T0-1003	TRV.CHARGER	50		OK	
59	2236-6620-4001	CABLE MINI CABLE	50		OK	
60	223A-0020-1080	HANDSFREE	50		OK	
	Service		50		OK	
61		SW D/L CABLE	50			
62	2281-18B5-0080	PCBA	50		OK	